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ABSTRACT

The transition from high school to college and work for tech prep participants was examined in a 4-year longitudinal study of local tech prep consortia in eight regions of the United States. The study methodology drew heavily on transcript analysis and two surveys with tech prep participants and nonparticipants. The tech prep participants and nonparticipants did not differ substantially in race/ethnicity, income, and parental education. The wide variations in secondary education and tech prep participation from consortium to consortium made it difficult to formulate definitive conclusions about particular models or approaches. The study findings did, however, support the notion that school and consortium requirements influence student participation in core academic courses relative to tech prep programs of study. The findings also suggested that it is incumbent upon school personnel to link tech prep core curricula to high school graduation requirements that go beyond the basic minimum requirements and prepare students for college entrance. (Thirty-nine tables/figures are included. The bibliography lists 33 references. Appendixes, constituting approximately two-thirds of the document, contain data on topics such as students' high school performance, demographic and background characteristics, course taking, work-based learning and high school work

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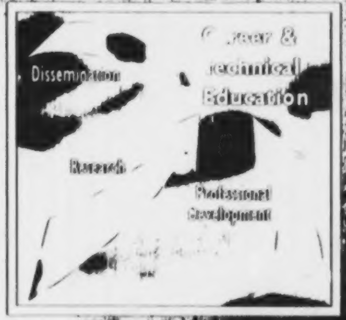

Transition from High School to College and Work for Tech Prep Participants In Eight Selected Consortia

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EXECUTIVE SUMMARY

This 4-year longitudinal study examines student experiences and outcomes in local tech prep consortia in eight different regions of the country. The study provides a quantitative analysis of students' experiences as participants in tech prep programs,[1] as well as their post-high-school educational and employment outcomes. Findings are presented for students identified locally as participants in tech prep programs, referred to as tech prep participants, as compared to a group of students drawn from the general student population with similar academic performance at high school graduation, referred to as non-participants. The study was undertaken to address fundamental questions about student involvement in tech prep programs and students' educational and employment outcomes after high school. Considering the federal commitment to tech prep implementation, beginning with the Carl D. Perkins Vocational and Applied Technology Education Act of 1990 (Perkins II), it is vitally important to understand various ways these programs have engaged and influenced student outcomes.

Questions addressing student transition to college and work after high school were at the forefront of this quantitative analysis because few studies have examined how tech prep programs influenced students' further education and work after high school graduation. Recognizing that a key feature of tech prep programs is the articulation of secondary and postsecondary curricula and preparation for future technical careers, a longitudinal study was needed to follow students from high school to college and into employment over an extended period of time.

The research design was mixed-method, allowing for a dominant and less-dominant approach (Creswell, 1994). From January 1998 through December 2001, we undertook a longitudinal causal-comparative assessment of student outcomes, drawing heavily upon transcript analysis (high school and college) and two surveys with tech prep participants and non-participants. Because of the unique policies and approaches in each site, our data analysis was conducted on a consortium-by-consortium basis, with cross-consortium results presented in the main text in narrative and figures, and supporting tables displayed by consortia in Appendixes A–O. All data presented in this report are maintained in the Community College and Beyond (CC&B) dataset at the University of Illinois at Urbana-Champaign (UIUC), providing a rich source of information for further analysis of students' transitions from high school to college and work.

This report presents results pertaining to eight local consortia of schools, and, when appropriate, attributes particular outcomes to the models utilized by these consortia. Specific results associated with only one or a few consortia are given when they seem to illuminate the merits of a particular model or strategy that could be meaningful to future policy and practice.

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[1] Tech prep programs require 2+2 core academic and career-technical education (CTE) curriculum linking the last 2 years of high school with the first 2 years of college, at a minimum. In many consortia, tech prep programs begin at lower levels of school, especially grade 9, and extend upward to the bachelor's level. Tech prep programs also integrate academic and CTE content, advancing the idea of curriculum integration by restructuring academic and CTE curricula, and providing a test bed for various instructional and curricular reforms. Other elements of tech prep include training for teachers and counselors (secondary and postsecondary), partnerships with business and industry, work-based learning, and preparatory and support services designed to assist students to be successful in their academic and career pursuits.

Otherwise, the results summarized herein reflect a more predominant pattern of results occurring across at least half of the sites.

Major Results and Implications for Policy and Practice

First, students who participate in tech prep programs do not differ substantially on race/ethnicity, income, and parental education from the comparison group of students who represent a general student population that achieved similarly to the tech prep group at high school graduation. Even so, family income and parental education was somewhat lower for tech prep participants than non-participants, suggesting some tech prep-students lack the economic and cultural capital (Labaree, 1997) reflected in the general student population. Gender emerged as a variable on which tech prep-participants differed from their peers in four consortia, favoring participation by males in all cases. This result was attributable largely to a preponderance of traditionally male-oriented career-technical education (CTE) specializations linked to tech prep. The CTE programs that enrolled males in larger numbers than females are not surprising, including computer technologies, electronics, manufacturing, engineering, and trade and industrial occupations. Recognizing that, according to federal law, tech prep programs require equal access by all students, including members of special populations, it is important that local personnel continue to insure equitable demographic representation among participants.

Tech prep-participants often display classic characteristics associated with at-risk behavior at the college level, including first-generation college enrollment and part-time enrollment balanced against part-time or full-time work (Tinto, 1997). Undoubtedly, these factors could jeopardize the ability of tech prep participants to persist in college, assuming they enroll in college after high school graduation. Further, a sizeable proportion of tech prep participants came from low-income families, and a few had already assumed the role of single parent. These student characteristics are known to place students at risk of dropping out of college (see, for example, Tinto, 1997), increasing the importance of having local personnel pay close attention to the school-to-college transition process for all students—particularly those who are more likely to drop out.

Secondary education and tech prep participation varied widely from consortium to consortium, making it difficult to formulate definitive conclusions about particular models or approaches. Acknowledging this, our results support the notion that school and consortium requirements influence student participation in core academic courses relative to tech prep programs of study. For example, tech prep consortia deliberately associating themselves with college prep requirements in subjects such as math and science seem to encourage students to engage in math- and science-course-taking more intensively and extensively than tech prep consortia that do not associate with these requirements.

Relative to non-participants, tech prep-participants in some consortia see benefits when more rigorous academic course-taking is required. Admittedly, these results are very difficult to disentangle from other factors that influence students' educational experiences, largely because many of the consortia were located in states that had raised high school graduation requirements during the 1990s, when this longitudinal study was undertaken. Even so, it is likely that establishing high school graduation requirements for tech prep core curricula that are associated with collegiate requirements has a positive influence on academic course-taking for tech prep participants. This finding suggests that it is incumbent upon school personnel to link tech prep core curricula to high school graduation requirements that go beyond the basic minimum requirements and ready students for college entrance. In consortia where the linkage between tech prep requirements and advanced academic requirements did not occur, tech prep students were less likely to move into more advanced academic curricula than tech prep participants in consortia where this requirement occurred. In a related finding, a few consortia showed that tech prep-participants need not be disadvantaged in fulfilling a college prep program of study if participating in intensive CTE course-taking.

Looking at academic course-taking (amount and level) in greater depth, four consortia showed group differences in the amount of high school math courses taken, with tech prep participants in one site taking more semesters than non-participants, but non-participants exceeding tech prep participants in the other three. In examining the level of math course taking, however, we found tech prep participants taking slightly more advanced math courses over their high school careers than their non-participant peers in four consortia. In one noteworthy case, tech prep participants started math at a lower level (45% in basic math) and finished at a higher level (87% in Algebra II or higher) than the non-participant group.

Group differences were also evident in the amount of science courses taken in seven consortia. Specifically, non-participants exceeded tech prep participants in the total semesters of science taken in five consortia, but in two sites (one consortium and one high school within a consortium), tech prep participants took more science than non-participants. Most students in both study groups were taking mostly regular science (e.g., biology, chemistry). In a few consortia, tech prep participants were taking more lower-level science courses than non-participants, but in most consortia, the differences between groups was related to differences in the proportion of students taking regular, regular honors, and physics courses—all of which are well beyond a basic level.

Looking at career-technical course-taking, tech prep participants were much more likely to be vocational concentrators than non-participants, as evidenced by 61% of all tech prep participants and 36% of non-participants meeting this vocational classification in five sites. (Vocational concentrators take three or more Carnegie units in one career path or CTE cluster area). Specialization in one career area beyond the concentration level, referred to as vocational specializer (having four or more Carnegie units in a particular CTE area), was observed less frequently, but it was apparent in five sites. In one of these, tech prep participants were nearly as likely to be vocational specializers as concentrators, indicating these students were amassing a substantial amount of knowledge and skills pertaining to a particular vocational specialization.

Career-technical education (CTE) course-taking was enhanced by the tech prep model in most sites, if judged by the level of secondary enrollment in CTE courses, including CTE courses articulated with a local college. Several forms of work-based learning, such as co-op and job shadowing, were prominent among tech prep participants, suggesting students who engaged in tech prep were more likely to be involved in intensive learning experiences related to careers—both in the classroom and off campus. An association was also found between tech prep sites and service learning/community service, indicating greater involvement among non-participants. Work during high school was prevalent for both groups, suggesting that students begin juggling school, work, and personal commitments very early in their educational lives.

Articulated course-taking occurred in CTE areas, with the most prevalent vocational areas being business, mechanics/repair, and precision production in five consortia. Articulated course-taking was substantial for tech prep participants in these five sites, ranging from 65% to 91% for tech prep participants, and 31% to 76% for non-participants. In four of these sites, participants in tech prep were more likely to take articulated courses than non-participants. Among all students who took articulated courses, tech prep participants took significantly more semesters, on average, than non-participants.

Differences between the study groups in the incidence of participation in college prep was evident in five consortia. Non-participants were more likely be designated college prep than members of the tech prep group in four of the sites. Relationships were found between tech prep status and college prep and vocational status in five sites. In most of these, a greater likelihood of vocational concentration was evident if students (either tech prep or non-tech prep) were not college prep. However, three consortia showed no association among these variables, suggesting tech prep participants who were vocational concentrators were no more or less likely to be college prep students than non-participants.

Recognizing that many students selected for this study are labeled "non-college bound," the proportion of students in each group that went on to college at the 2-year and 4-year college levels is astounding. Indeed, the percentage of students attending college at the 2-year level was quite high, with over 80% of the tech prep participants in six consortia, and close to that percentage or higher for the non-participant group in five consortia. Enrollment of tech prep participants exceeded non-participants in seven consortia, but the difference between groups was usually small, with a significant difference evident in only two sites. Results confirm earlier findings of Boesel and Fredland (1999) and others, suggesting that "college for all" is more than a catchy phrase. Tech prep participants show a slight preference for attending 2-year colleges compared to their non-participant peers, but, again, this is not surprising given the focus of articulated course-taking that emphasizes sequenced course work extending from high school to community colleges. What seems more interesting is the incidence with which tech prep participants attend both 2-year and 4-year colleges, and 4-year only. Attendance at 4-year college is particularly evident among tech prep participants living in localities where higher education options are plentiful, suggesting consortia located in urban or suburban areas with a dense higher education market may benefit from building relationships with a wide range of higher education institutions, utilizing tech prep as a launching point for a wide variety of postsecondary opportunities.

Though the accumulated hours of college credit did not differ for the two groups in most consortia, a difference was revealed in two consortia where tech prep participants earned more college-level hours than non-participants, and these results held after controlling for differences in panel affiliation (95, 96, or 97).

Completion of a college degree (AA, AS, or AAS) or certificate was not a common occurrence for students in any consortium, regardless of tech prep status. The median percentage of students earning some credential was only 10.5%, after 3 or 4 years of high school graduation for most students. Indeed, most consortia reported a modest range of completers, at 8.5% to 11.7%.

College enrollment among tech prep participants involved fairly substantial continuation of CTE course-taking, suggesting that if students finish a tech program in high school and enroll at the lead college within a few years, they are likely to continue enrollment in a tech prep program at the postsecondary level. Continuing tech prep participation from the secondary to the postsecondary level ranged from only 16.5% in one consortium to nearly 90% in another, with three consortia showing from 31% to 38% of their high school tech prep participant group continuing tech prep at the lead college. Of tech prep participants who transitioned to the lead college, typically over one half continued to pursue a tech prep program of study, with participants in one consortium continuing at an astonishing rate of 95%.

Results suggest many students enroll at the college level, but few enroll for sufficient hours to finish a certificate or degree within 2 to 4 (and occasionally 5) years of high school graduation, and this result is consistent for both study groups, across all sites. These results also point to the importance of consortia encouraging high school tech prep participants to enroll in college, and supporting them in efforts to continue their education in tech prep career paths. Once there, students are likely to continue the focus they developed in high school, but they need to be supported in pursuing consistent enrollment and credentials.

Looking at college readiness among tech prep participants and non-participants, we learned that from 40% to nearly 80% of tech prep participants are placed into college-level course work overall, with an even wider range of college-level placement (nearly 30% to 76%) among non-participants. (This finding is based on the local institutional standard for college placement in career programs, which we referred to as the career standard. Using the transfer standard set by each institution, the vast majority of students (tech prep and non-tech prep) were not placed into college-level studies. One consortium was the exception, where slightly over half of both student groups were college ready.

When students failed a placement test, it was usually because they had difficulties with math, and this result was evident for both groups of students (tech prep and non-tech prep).

Overall, completion rates of remedial/developmental and college-level hours were similar, on the average, and the averages ranged from about two thirds to four fifths, from site to site. Differences between participants and non-participants in completion rate were few, with no consistent tendency as to direction.

Finally, the pattern of holding a job during high school extends to college for most students, plus some students made a deliberate choice to enter employment full-time without enrolling in college. Students who work after high school typically take full-time jobs in relatively unskilled, low-wage jobs. There is evidence, however, that tech prep participants in some consortia are advancing beyond this level of employment, suggesting potential benefits for tech prep participants in the labor market. A combination of factors may contribute to this phenomenon, including the relevance of tech prep training to semi-skilled or technical employment that is above minimum wage, but also because more participants than non-participants spend time with one employer, moving up from unskilled jobs obtained during high school to semi-skilled jobs after high school graduation. Admittedly speculative, these and other factors may contribute to positive economic outcomes for tech prep participants as compared to non-participants. Furthermore, tech prep participants tended to report higher hourly earnings, but this result was significant in one consortium only.

Considering the enduring federal commitment to tech prep implementation beginning with the Carl D. Perkins Vocational and Applied Technology Education Act of 1990 (Perkins II), this study makes a valuable contribution to the literature because it advances knowledge of the various ways in which tech prep programs engage and influence students.

FOREWORD

This document represents the final installment in a series of reports focusing on tech prep implementation and student outcomes. Beginning in January 1998, the U.S. Department of Education, Office of Vocational and Adult Education (USDE, OVAE) initiated a study of eight local consortia in different regions of the United States. Initially, this study, known as Community College and Beyond (CC&B), was led by research staff at the University of Illinois at Urbana-Champaign (UIUC) and University of California at Berkeley under the auspices of the National Center for Research in Vocational Education (NCRVE), University of California-Berkeley. The study involved extensive fieldwork to examine local planning and implementation policies and practices, and to initiate a causal-comparative study of student outcomes involving a substantial number of tech prep participants and non-participants in each site. Initial results were published by Bragg et al. (1999), *The Community College and Beyond: Implementation and Preliminary Outcomes of Eight Local Tech Prep/School-To-Work Consortia*, providing a detailed description of each consortium's tech prep programs and preliminary insights into students' educational experiences and outcomes.

Under the auspices of the National Research Center in Career and Technical Education (NRCCTE), University of Minnesota, the study continued from January 1, 2000, through December 31, 2001, at UIUC. During this period, fieldwork continued with all eight sites to document new developments and challenges, particularly those related to the 1998 federal reauthorization of tech prep education. Data collection involving student experiences and outcomes was also furthered, including the acquisition of new college transcripts during the 2000–2001 academic year and the administration of a second follow-up survey in summer 2001. With respect to the field work, a report by Bragg and Reger (2002), provided an in-depth qualitative analysis of changes occurring as tech prep programs spread and deepened within the eight local consortia engaged in this study.

This final report, prepared by a team of researchers at UIUC, provides a quantitative analysis comparing students' experiences in various elements of tech prep programs and related outcomes, utilizing a group of tech prep participants and a similar group of students drawn from the general student population (referred to as non-participants). Although the results presented herein use various basic and advanced statistical techniques, the main body of this report is written with multiple audiences in mind, including non-researchers who need the information to develop local and state policies and practices. Reserved for the end of the report, in appendixes, are tables containing statistical results that support the main text. Researchers who desire greater detail on the quantitative analysis are encouraged to review the appendixes carefully, and they are asked to contact the lead author to answer methodological and procedural questions.

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Debra D. Bragg, Project Director

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INTRODUCTION

Slightly over a decade ago, the Carl D. Perkins Vocational and Applied Technology Education Act of 1990 (commonly known as Perkins II) was passed, beaming a spotlight on vocational education (often referred to as career-technical education) nationally. In an era of educational reform focusing almost entirely on academic education, Perkins II suggested educational reform should include career, vocational, and technical education, in addition to academics. Among several changes promised by Perkins II was an educational reform called technical preparation or tech prep. Building on ideas initiated during the 1980s, the federal law encouraged tech prep planning and implementation in all 50 states under the auspices of local consortia made up of secondary schools, postsecondary institutions, business/industry/labor partners, and sometimes other entities. Beginning in 1991, local consortia formed and initiated tech prep programs nationwide, often building on articulation agreements between high schools and community colleges that preceded the 1990 federal law (see, for example, Bragg, Layton, & Hammons, 1994; Elliott, 2000; Hershey, Silverberg, Owens, & Hulsey, 1998).

In accordance with the Tech Prep Education Act, Title IIIE of the 1990 federal Perkins II legislation, the tech prep approach was intended to encourage more relevant, academically-challenging curriculum for the general student population of high schools by improving articulation between educational programs offered at the secondary and postsecondary levels (Parnell, 1985). Improved transition to college would occur because tech prep programs require 2+2 core academic and career-technical education (CTE) curriculum linking the last 2 years of high school with the first 2 years of college, at a minimum. In fact, many consortia have offered tech prep programs beginning at lower levels of school, especially at the ninth-grade level, and some have extended the curriculum upward to the bachelor's level (Hershey et al., 1998).

Besides articulation, tech prep was intended to integrate academic and vocational, or CTE, content more fully than has happened in the past. In fact, curriculum integration was a predominant emphasis for all CTE programs funded under the 1990 federal legislation. Though small in scale relative to overall funding for CTE overall, tech prep has been credited with advancing the idea of curriculum integration by restructuring academic and CTE curricula, and providing a test bed for various instructional and curricular reforms designed to align the traditional academic subjects of math, science, and English/communications with career technical-education course work (Hershey et al., 1998).

Reauthorization of the federal legislation in 1998 (known as Perkins III) reinforced a national commitment to tech prep. In addition to these foci, Perkins III placed greater emphasis on changing instructional strategies at both the secondary and postsecondary levels by encouraging contextual teaching and applied learning, along with work-based learning (WBL). In addition to the training specified for faculty in the Perkins II law, secondary and postsecondary faculty were to be trained in the use and application of technology, and they were to be encouraged to stay abreast with the needs, expectations, and methods of business and all aspects of industry. Equally important, Perkins III endorsed the idea of articulation of tech prep programs with 4-year college curricula, encouraging sequential curriculum culminating with the bachelor's degree.

In both the 1990 and 1998 federal legislation, key components of the tech prep approach were elucidated in what has become known widely as the "seven essential elements." These elements provide a general template for tech prep planning and implementation on the state and local levels. Understanding the intent of each element, both in terms of the original 1990 legislation, as well as changes evident in the 1998 amendments, provides a conceptual schema by which implementation and student outcomes can begin to be assessed. Previous research conducted by the National Association of Tech Prep Leadership (1999), Hershey et al. (1998), Ruhland and Timms (2001), and others has been instrumental in helping to understand implementation of the essential elements and other core components of tech prep. However, these studies have not dealt thoroughly with student outcomes—specifically with how the essential elements influence student experiences and outcomes.

Essential Elements (1990 and 1998)

Program theory (Chen, 1990; Weiss, 1998) provides a means of surfacing the intent and expected outcomes of the key components of a social or educational program. In terms of tech prep, the federal law outlines essential elements, and program theory can be applied to create a conceptual framework that allows for deeper understanding of what tech prep programs are intended to achieve, how they are supposed to operate, and how students are expected to benefit from participation in them. Each of the seven essential elements is presented in this section in terms of normative theory (Chen), which refers to how the program should work from the perspective of policy and practice. This section also identifies how students' educational experiences and outcomes relate to program goals and intent. Chen refers to this as "causal theory" in that existing research is used to "describe potential outcomes of the program based on characteristics of the clients and the program actions" (Worthen, Sanders, & Fitzpatrick, 1997, p. 221). Utilizing these theoretical constructs, we attempted to identify and elucidate how tech prep student experiences and outcomes are expected to relate to goals and intent.

Essential Element 1: Articulation Agreements

Intent. Both versions of the federal legislation addressing tech prep (1990 and 1998) specify that articulation agreements be developed and executed between participants in local consortia. By *participants*, the law refers to organizations associated with tech prep, including secondary schools and school districts, community colleges and/or other 2-year collegiate institutions, and business/industry/labor partners. In addition, 4-year colleges and universities and community-based organizations, such as churches and youth organizations, may be stakeholders. Articulation agreements formalize partnerships between and among these institutions (also referred to as *partners*) by creating sequential courses, and specifying how student participants should receive credit for successfully completing the courses. (See Table 1 for a summary of the essential elements of tech prep and implications for student experiences and outcomes.)

Table 1
Essential Elements of Tech Prep and Implications for Student Experiences and Outcomes

Essential element intent	Student experiences and outcomes
1. Articulation agreement between the participants in the consortium. *No discernable change from 1990 to 1998.*	• Students may participate in articulated courses, curricula, or programs that link the secondary level with the postsecondary level or other entities offering post-high school education, training, or work experience in a consortium (i.e., apprenticeship with labor). • Students may accumulate college credits during high school through concurrent enrollment, dual credit, or other arrangements that provide credit with colleges or other entities including advanced placement, time-shorted, or other advanced curriculum arrangements. • Students who participate in articulated course work are thought to have the opportunity to participate in logically sequential course work that leads to smoother and more successful transition to college.
2. Two years of secondary school preceding graduation and 2 years of higher education, or an apprenticeship of at least 2 years following secondary instruction, with a common core of required proficiency in math, science, communications, and technologies designed to lead to an associate degree or certificate in a specific career field. *In 1998, reading and writing were added to this element.*	• Students participating in tech prep are required to engage in a core curriculum comprised of academic and career-technical education (technologies) that begins in at least the 11th grade of secondary school and extends to at least 2 years of college. • The definition of core curriculum, either academic or career-technical education (CTE), is not specified in the federal law, leaving decisions to state or local entities. • Various definitions and approaches to core curriculum may be defined by states or local consortia, or no clear specification may be applied. • Alternative foci of core academic curriculum may include associating tech prep with minimum graduation requirements or with college entrance requirements,'in accordance with state laws. • Alternative foci of CTE curriculum may include specifying that students complete a sequence of CTE courses of a certain duration (e.g., 2 years or more) and/or that they complete designated capstone courses. • Core curriculum may not be specified at the postsecondary level in accordance with tech prep programs. In some cases, postsecondary tech prep programs may identify core curriculum, but the specifications usually do not differ substantially from existing postsecondary CTE program requirements.

Essential element intent	Student experiences and outcomes
3. Include the development of tech prep program curricula appropriate to the needs of consortium participants. *In 1998 the following items were added or restated:* *(a) meets academic standards developed by the State;* *(b) links secondary schools and 2-year postsecondary institutions, and if possible and practicable, 4-year institutions of higher education through nonduplicative sequences of courses in career fields, including the investigation of opportunities for tech prep secondary students to enroll concurrently in secondary and postsecondary coursework;* *(c) uses, if appropriate and available, work-based or worksite learning in conjunction with business and all aspects of an industry; and* *(d) uses educational technology and distance learning, as appropriate, to involve all the consortium partners more fully in the development and operation of programs.*	• Students are expected to engage in curriculum that meets the academic standards set by the state, so they may be expected to meet or exceed appropriate academic standards set by the state. • Students' progress through the curriculum, from the secondary to the postsecondary level, may involve engagement in sequential course work with minimal duplication or redundancy in subject matter. • Referring again to the element on articulation agreements, students may have the opportunity to participate in and benefit from course work that provides concurrent enrollment, dual credit, or other options. • Students may be provided opportunities to engage in work-based learning and gain first-hand experience learning in the workplace, including specific academic, technical, and employability competencies. • Students may gain access to academic and/or technical course work through distance learning that involves consortium partners who might not otherwise have the opportunity to be involved.
4. Include in-service training for teachers that— (a) is designed to train *vocational and technical ('98)* teachers to implement tech prep; (b) provides for joint training for teachers from all participants in the consortium; (c) may provide such training on weekend, evening, summer, or workshops. *In 1998, the following items were added or restated:* (a) *is desig[illegible] ensure that teachers and adminis[illegible]ors stay current with the needs, expectations, and methods of business and all aspects of an industry;* (b) *focuses on training postsecondary education faculty in the use of contextual and applied curricula and instruction; and* (c) *provides training in the use and application of technology;*	• Students may have the opportunity to participate in more current and relevant instruction in CTE fields because of the training their teachers have received about business and all aspects of an industry. • Students at the secondary and postsecondary levels may participate in contextual and applied curricula and instruction that enhances their progression through school and into employment situations. • Students may experience enhanced academic achievement if they are enabled, through contextual and applied curricula and instruction, to advance further and more successfully through academic and CTE curricula. • Students may have opportunities to learn about technologies through school-based or work-based learning experiences that their instructors have gained through training related to tech prep.
5. Include training programs for counselors designed to enable counselors to more effectively—	• Students may have enhanced opportunities to know about tech prep programs because of the tech prep-related training received by their counselors.

Essential element intent	Student experiences and outcomes
(a) recruit students for tech prep; (b) ensure that such students successfully complete such programs; and (c) ensure that such students are placed in appropriate employment. *In 1998, the following items were added or restated:* *(a) provide information to students regarding tech prep education programs;* *(b) support student progress in completing tech prep programs;* *(c) provide information on related employment opportunities;* *(d) ensure that such students are placed in appropriate employment; and* *(e) stay current with the needs, expectations, and methods of business and all aspects of an industry.*	• Students may be supported in their efforts to complete tech prep programs with student support activities because of counselor training. • Students may learn about employment opportunities related to their tech prep programs. • Students may have job placement opportunities because of training received by their counselors. • Students may have the opportunity to participate in more current and relevant instruction in CTE fields because of the training their counselors have received about business and all aspects of an industry.
6. Provide equal access to the full range of tech prep programs to individuals who are members of special populations, including the development of tech prep services appropriate to the needs of such individuals. *(No discernable change from 1990 to 1998.)*	• All students may have the opportunity to access tech prep programs, including members of special populations. • All students may gain access to special support services that are needed to allow them to be successful participants in tech prep programs. • Students may gain access to occupations non-traditional to their gender, and they may receive support services enabling them to be more successful.
7. Provide for preparatory services that assist all participants in such programs. *(No discernable change from 1990 to 1998.)*	• All students may experience preparatory services that allow them to be successful entering tech prep programs or progressing through them, including career guidance and development programs, assessment, and so forth. • Students may gain access to special academic services, including remedial/developmental education and related support services (e.g., tutoring, mentoring) to enable them to enter or advance in a tech prep program of study.

Note. Items from the Carl D. Perkins Vocational and Technical Education Act Amendments of 1998 are shown in italics. Other items come from the Carl D. Perkins Vocational and Applied Technology Education Act of 1990.

Student experiences and outcomes. What does the essential element dealing with articulation agreements have to do with student experiences and outcomes? When students participate in tech prep curriculum, which is supported by articulation agreements, they enroll in courses that make them eligible for college credit, either during high school via dual credit or after enrolling and demonstrating proficiency at the college level through deferred credit arrangements. When college credit is deferred, tech prep participants usually obtain it once they have enrolled in more advanced college-level courses or upon passing placement tests administered by the postsecondary institution.

In theory, tech prep participants who engage in sequential, articulated course work, earning college credit, benefit by entering college and progressing in a more efficient manner than their peers who have not participated in articulated curriculum. Tech prep participants may have progressed more rapidly into advanced course work than non-participants because they completed lower level courses in academic and CTE areas that prepared them for collegiate-level courses. Compared to their peers who do not have a leg up on college, tech prep participants should be able to continue in a specific career pathway affiliated with tech prep, and they may be more likely to persist in college more successfully than peers.

Essential Element 2: 2+2 Core Curriculum

Intent. The 1990 federal law specified that tech prep programs be offered during the last 2 years of secondary school preceding graduation and the first 2 years of higher education, or through an apprenticeship of at least 2 years following secondary instruction. Amendments following the 1990 legislation and further enhancements to the 1998 law provide the option of extending core curriculum downward to the ninth-grade level, while also encouraging articulation agreements upward to the baccalaureate level. By common core curriculum, the 1990 legislation suggested "required proficiency in math, science, communications, and technologies designed to lead to an associate degree or certificate in a specific career field." Perkins III added reading and writing to core curriculum, presumably at both the secondary and postsecondary levels.

Student experiences and outcomes. Students who participate in 2+2 tech prep core curriculum should be expected to meet or exceed minimum high school graduation requirements established by the states and Local Educational Agencies (LEAs). As a consequence, tech prep participants should be at or above grade-level in core academic competencies. In some states, such as North Carolina and Texas, high school students participating in tech prep are encouraged to meet college entrance requirements more advanced than minimum high school graduation, and this tech prep model is referred to as College Tech Prep (Bragg, 2001b), These students should demonstrate competencies commensurate with college entrance and entry-level college course work comparable to their peers who have completed the traditional college prep curriculum. Of course, some states and localities do not specify requirements at the college level, opting instead for tech prep participants to meet basic high school graduation requirements. Without participation in advanced academics, it is unlikely tech prep students possess competencies beyond a basic level.

Similarly, CTE curriculum may be precisely specified by local curricula (for example, specifying 2 years of sequential course work and successful completion of capstone courses, as is required by the state of North Carolina; Bragg, 2001b). In these cases, tech prep participants have a clear roadmap for CTE course-taking, leading them from high school courses to college-level ones. At the postsecondary level, some tech prep programs are systematically linked to the secondary level, with college-level courses sequenced so that students progress smoothly through the curriculum (Hershey et al., 1998).

On the other hand, the CTE curriculum may not be specified formally, resulting in CTE course-taking as an elective during high school. When secondary and postsecondary CTE curriculum is not progressive, there is diminished likelihood that students will gain competence in advanced CTE specializations. In fact, a lack of attention to core curriculum at the postsecondary level has been an on-going concern identified by several researchers, due partly to questions pertaining to students' level of competency development (see, for example, Grubb, Badway, Bell, & Kraskoukas, 1996).

Further, when tech prep participants have demonstrated secondary-level competence, and have advanced sequentially into the postsecondary curriculum, they should be able to enter college ready to learn (Parnell, 1994). Moreover, where continuing tech prep participants enter college having already accumulated college-level credit through articulated courses or dual credits in academic and CTE courses, they should be prepared to advance in the postsecondary curriculum at a more rapid pace than peers who evidenced no such participation. When college credit accumulation is evident, it is possible for students to earn college-level credentials at a brisker pace than students who enroll in traditional curriculum (Bragg & Reger, 2002; Yoo, 2001).

Essential Element 3: Curriculum Development

Intent. This element refers to the development of tech prep curricula appropriate to the needs of consortium participants. It was loosely defined in the 1990 law, but the 1998 legislation added several items of clarification, including a requirement that curricula meet the academic standards developed by the state. According to the law, solid curricular linkages to standards provide "nonduplicative sequences of courses in career fields," including opportunities for tech prep participants to enroll concurrently in secondary and postsecondary studies. Other instructional alternatives encouraged by the 1998 legislation parallel approaches closely aligned to the School-To-Work Opportunities Act (STWOA) (see, for example, Hughes, Bailey, & Mechur, 2001). For example, the 1998 law paid far more attention to work-based learning (WBL) than the previous bill did. In addition, the 1998 federal law mentioned educational technology and distance learning as aspects of curriculum development, presumably to enhance student access to the resources of all consortium partners.

Student experiences and outcomes. In what ways might this essential element impact students' learning experiences or educational and employment outcomes? Undoubtedly, tech prep participants are expected to engage in curricula, and meet or exceed appropriate academic learning standards set by the state. Student progression through the core curriculum, from the secondary to the postsecondary level, should involve sequential course work with minimal duplication or redundancy, as evidenced by the accumulation of dual credits before high school graduation—resulting in a smoother transition into college. Again, as is evidenced with other related essential elements, students are expected to acquire at least the basic, and more likely advanced, academic competencies, depending on the emphasis the consortium has placed on minimum versus college-level academic course-taking and high school graduation requirements.

Students are expected to benefit from work-based learning (WBL), gaining first-hand experience learning academic, technical, and employability competencies in the workplace. Tech prep participants may also gain access to academic and technical course work or other learning opportunities using educational technologies, including distance learning, and involving consortium partners (such as potential employers) who would not otherwise have direct contact with students. Through these alternative learning experiences, students should be able to apply what they have learned in the classroom to real-world learning experiences. They should also be able to transfer learning in the workplace to in-school settings where they better understand the purpose for learning, possibly experiencing a heightened motivation to learn.

Essential Element 4: Teacher Training

Intent. In-service training of teachers is designed to assist all teachers, academic and CTE, to implement tech prep programs more effectively. All consortium partners are encouraged to participate in joint training of teachers, and these in-service experiences are intended to assist teachers and administrators to stay current with the needs, expectations, and methods of business and all aspects of an industry, and to encourage the use and application of educational technologies. In addition, the training of postsecondary education faculty is specified to assist them in using contextual and applied curricula and active learning strategies.

Student experiences and outcomes. Students' learning experiences and outcomes may be influenced by teacher training, because this element focuses on the learning experiences of teachers (and administrators). First, tech prep participants may have the opportunity to participate in current and relevant instruction in CTE fields because of the training their teachers have received in the classroom and in workplace settings. Further, tech prep participants may engage in contextual and applied curricula and modern instructional environments that enhance their progression through school, college, and employment. Tech prep participants may experience enhanced academic achievement through contextual and applied curricula, and they may be more highly motivated to advance further and more successfully through academic and CTE curricula. This being the case, tech prep students may be more likely than other students to attend secondary school regularly, to remain in high school and complete diplomas, and to continue their education at the postsecondary level.

Essential Element 5: Counselor Training

Intent. According to the 1990 legislation, tech prep includes in-service training for counselors designed to enable them to more effectively recruit students for tech prep programs, help students to complete their programs successfully, and ensure that students are placed in appropriate employment (Puckett & Bragg, 2000). In the 1998 legislation, a shift in intent was apparent, as counselors were positioned more as conveyors of information and supporters of the tech prep approach, and less in the role of recruiter and job placement officer. Thus, the 1998 law indicates that counselors should provide information to students regarding tech prep programs, support their progression through such programs, provide information on related employment opportunities, ensure students are placed in employment opportunities related to their training, and stay abreast of current developments in business, including all aspects of an industry.

Student experiences and outcomes. Similarly to in-service training for teachers, students are expected to benefit from this essential element indirectly through their guidance counselors' learning and relevant behavior. Tech prep participants should, therefore, have enhanced opportunities to know about tech prep programs because of information shared by their counselors. They should feel supported in their efforts to participate in and complete tech prep programs because of student support services, including academic and career guidance. Tech prep participants should also learn about employment opportunities related to their studies, be made aware of ways to secure employment in these areas, and gain access to these jobs. Lastly, the legislation implies that tech prep participants may have the opportunity to participate in more current and relevant instruction in CTE fields because counselors have received training about them from business and industry.

Essential Element 6: Equal Access

Intent. Equal access is the essential element emphasizing all students, including members of special populations, should gain access to the full range of tech prep programs offered by their consortium. This element provides for the development and delivery of tech prep services appropriate to the needs of all students. Emphasized in both the 1990 and 1998 federal legislation, this essential element ensures that students have access to tech prep programs and related services that can assist them to be successful.

Student experiences and outcomes. This essential element is profoundly important because it ensures that all students, including students from racial/ethnic minority groups, low-income, and members of special populations, have an opportunity to access tech prep programs. The element does not imply or ensure that all students will, in fact, participate, but it does provide the possibility that all students can do so, if they so choose. Consistent with the broader intent of the Perkins law, this element ensures that students gain access to career programs non-traditional to their gender, and that they receive needed support services enabling them to be successful in non-traditional programs. When fully implemented, this element ensures that student participants in tech prep are at least as diverse as the general student population in terms of gender, race/ethnicity, socioeconomic status, and special population status.

Essential Element 7: Preparatory Services

Intent. This essential element is consistent from the 1990 to 1998 legislation, and it emphasizes preparatory services to assist all participants in tech prep programs. Career guidance services are often associated with preparatory services (Hershey et al., 1998); however, other academic and support services may be involved. For example, students lacking adequate academic competencies to advance to higher-level math and science in high school or college should be able to access preparatory services such as remedial or developmental education. Though tech prep is intended to reduce or even eliminate the need for remediation among tech prep participants who transition from high school into college (Parnell, 1994), some students may continue to need these special academic services.

Student experiences and outcomes. First, all students should gain access to preparatory services, and these services should have a positive impact on students' abilities to enter tech prep programs at the secondary level, or advance to the postsecondary level successfully. In addition, students should have the opportunity to learn about a range of educational and career opportunities that are affiliated with tech prep programs, and these services should facilitate students' abilities to make appropriate decisions about college and careers.

Taken together, the essential elements of tech prep suggest a multifaceted approach to educational reform. Core curriculum, articulation agreements, teacher and counselor training, career guidance, and work-based learning are some but not all of the key components of tech prep mentioned or alluded to by the federal essential elements. With such a rich array of activities and options associated with tech prep, program implementation is invariably complex, suggesting student experiences and outcomes are complex, as well. To measure these things, a research design that is sensitive to the inevitable diversity of approaches should be taken by local consortia.

PURPOSE OF THE STUDY

Considering the federal commitment to tech prep and implementation at the state and local levels, it is important to understand how tech prep participants have engaged in secondary education, and how they have transitioned from high school to college and work. In this report, we describe the student population engaged in tech prep; determine the academic and CTE course-taking and performance of tech prep participants as compared to a similar group of students not involved in tech prep (referred to as non-participants); determine the transition-to-college patterns of these two groups, including college readiness and enrollment in postsecondary CTE programs; identify students' college enrollment, persistence and completion; and ascertain students' work experiences, both during and after high school graduation.

Stepping back from these specific objectives, this study allowed us to examine tech prep as an educational reform associated with the "new vocationalism" (Bragg, 2001a; Grubb, 1997) and determine whether it has contributed to local educational reform by being a mechanism for changing the "core of schooling" (Elmore, 2000, p. 7). With respect to this study, understanding students' secondary course-taking behaviors and performance, both in terms of school-based and work-based learning, provides insights into the "core of schooling" for tech prep participants, as compared to other general population students.

The purpose of this research was to enrich and deepen understanding of students' educational and employment outcomes associated with tech prep programs utilizing various definitions, core curricular configurations, and delivery models and strategies, including youth apprenticeships and career academies. Questions specifically addressing student transition to college and work after high school have been neglected by previous research associated with tech prep, heightening the importance of doing causal comparative analysis of students' post-high school experiences and outcomes.

Specific research questions that guided the study follow:

1. What are the selected demographic, personal, and background characteristics of tech prep participants, and how do these characteristics compare to a similar group of students identified as non-participants? Do these characteristics differ for different panels (year of high school graduation) of tech prep participants and non-participants?
2. What are participants' course-taking patterns and performance at the high school level, particularly in math, science, English, and CTE, and how do tech prep participants compare to non-participants on these variables? Does course-taking and work differ for different panels of tech prep participants and non-participants?
3. How do tech prep participants experience the transition from secondary school to college, including readiness for college-level course work and continuation of tech prep participation? How do tech prep participants compare to non-participants on these variables? Do the transition-to-college experiences differ for different panels of tech prep participants and non-participants?

4. For those students who continue to the lead college, what are tech prep participants' experiences in college-level studies and outcomes, including enrollment, persistence, and completion of credentials? How do tech prep participants compare to non-participants on these variables? Do the college experiences differ for different panels of tech prep participants and non-participants?

5. What are the work experiences of tech prep participants after high school graduation? How do tech prep participants work experiences compare to non-participants? Do work experiences differ for different panels of tech prep participants and non-participants?

METHODS

In January 1998, a mixed-method research study was begun in eight purposively selected local consortia in the U.S. A mixed-method design was used, allowing for a dominant and less-dominant approach (Creswell, 1994). In the overall research study, case study methods were dominant, and a causal-comparative assessment of student outcomes was the less-dominant approach. This is because, from our view, an in-depth understanding of local implementation was needed to make sense of student outcomes relative to a reform as newly implemented as tech prep. Thus, we centered our mixed-method design around fieldwork that involved repeated visits and on-going communication with each of eight consortia over a 4-year period of January 1998 to December 2001. Building on this fieldwork, we undertook the causal-comparative assessment of student outcomes, drawing heavily upon transcript analysis (high school and college) and two follow-up surveys with tech prep participants and non-participants. Because of the unique policies and approaches in each site, we deliberately chose to conduct the student outcomes analysis on a consortium-by-consortium basis, with results from each consortium detailed in this report via narrative (main text) and tabular format (appendixes). Data presented herein are maintained in the Community College and Beyond (CC&B) dataset at the University of Illinois at Urbana-Champaign.

Site Selection

Prior to the official start of the project in January 1998, project staff identified a panel of national experts who nominated consortia they believed had a strong commitment to tech prep implementation. In fall 1997, the expert panel identified six consortia as mature implementers of tech prep, and these consortia became the initial sites for the study beginning in January 1998 (with a project kick-off meeting involving personnel from all sites and the OVAE, USDE, in Tampa, Florida.) Later in 1998, at the request of the OVAE, USDE, two consortia were added to the study to strengthen the study design. Though these consortia were selected later than the initial group of six, a common set of criteria was used.

Criteria used to select all eight consortia follow:

- The consortium showed a strong commitment to tech prep as a primary vehicle of educational change or reform (though the exact model and approach varied across the selected sites);
- The consortium was identified by state personnel and peer institutions as representative of the preferred policies and practices emphasized within the state for tech prep implementation;
- The consortium was not too unique or extreme to offer potentially valuable lessons about tech prep implementation to other consortia;
- The consortium was a "mature" implementer of tech prep in that it had started planning and implementation soon after Perkins II funds were awarded (or before), and enrolled students at the secondary and postsecondary levels by the mid- to late-1990s. Also in the

mid- to late-1990s, the School-to-Work Opportunities Act (STWOA) was passed, with funding for similar activities as tech prep, so local initiatives that had implemented tech prep and STWOA activities were selected;

- The consortium had initiated local evaluation of tech prep, had begun to document student outcomes (often with state support), and showed a willingness to incorporate key aspects of the proposed research design into future evaluation plans;
- The consortium was committed to participate in the study as one means of encouraging local stakeholders to increase their understanding of tech prep implementation, to share what they had learned with others, and to use results to improve local programs; and
- Across and within the consortia, there was representation from rural, suburban and urban schools. As a result, a diversity of resources and circumstances were evident.

In summary, the eight local consortia included exist in different parts of the country, and they represent varied approaches to educational reform. A description of some key features of these eight tech prep initiatives appears in Table 2 and in the narrative below. For a more detailed portrayal of each tech prep consortium, readers are encouraged to seek two documents: Bragg et al. (1999), *The community college and beyond: Implementation and preliminary outcomes of eight local tech prep/school-to-work consortia*, and Bragg and Reger (2002), *Post-Perkins II tech prep implementation: Major changes in selected consortia since 1998*. Both reports are available on the National Centers for Career and Technical Education (NCCTE) website at http://www.nccte.com.

The East-Central Illinois Education-To-Careers Partnership in Danville, Illinois (IL), features the tech prep/youth apprenticeship model for a small segment of students in the local high schools. Youth apprentices take academic and career-technical courses in their home high school and the area vocational center, with extensive work-based learning experiences and strong connections to the community college through mentoring arrangements. For students not engaged in tech prep, the consortium offers 4+2 Tech Prep sequences approximating the vocational tech prep model articulated by Hershey et al. (1998). Students participating in vocational tech prep take CTE courses in their home high schools and sometimes the area vocational center, supplemented with applied and traditional academics. For vocational tech prep students (not youth apprentices), articulation agreements limit six college credit hours on a deferred basis, producing a relatively weak curricular connection from high school to the community college.

In the Metro Consortium[2] both of the high schools engaged in this study are considered vocational high schools. These schools are magnets where all students engage in an extensive amount of CTE course work, with one school specializing in health occupations and the other in occupations traditionally associated with industrial careers and related trades. Tech prep students in these schools are identified by their participation in tech prep math and English courses that emphasize an integrated academic and CTE approach. In addition, the consortium offers many school-to-college transition activities that encourage and support students in making the transition to the lead college, which is located directly across the street from one of the high schools. Although articulation is not as prominent a feature of this consortium as it is in other locales or sites, the consortium classifies its programs as 2+2, with some 2+2+2 programs. And this is logical, since the lead college in the consortium offers both the associate and bachelor's degree.

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[2] A pseudonym is used to protect the identity of this consortium, in concert with the human subject protection agreement formulated by UIUC researchers, and agreed upon by local officials.

The Hillsborough Tech Prep Consortium in Hillsborough County, Florida (FL), defines a tech prep student as any student who has completed, by Grade 11, at least one CTE course in an articulated program of study and two courses each of English, science, and mathematics at specified levels identified by the state. A tech prep course of study consists of an articulated sequence of CTE courses taken during the final 2 years of high school and the 2 years of postsecondary education leading to an Associate of Science (AS) degree. Since tech prep students are identified in Grade 9 and are required to complete certain levels of courses in order to enroll in tech prep by Grade 11, the tech prep approach is considered 4+2, with some 4+2+2 programs available, utilizing dual credit or time-shortened arrangements. While this initiative is focused on vocational tech prep mostly, a college tech prep pathway is offered to students. The consortium also offers a few career academies, particularly in the vocational high schools in the area.

The Golden Crescent School-To-Careers/Tech Prep Consortium in Victoria, Texas (TX), follows the state's requirements in defining a tech prep student as one who follows an approved tech prep high school plan of study leading from Grades 9–12 to postsecondary education and training. Students are encouraged to prepare 6-year plans based on the state's recommended college preparatory plan, providing them with flexibility to pursue the college prep or college tech prep plan of study. Occupations identified as tech prep occupations are those that have been targeted by a regional quality workforce committee as meeting a high standard of skill level and high wages. The consortium's primary articulation approach is based on the 4+2 model, consisting of a high school core curriculum of grade-level, or above, academic courses, combined with a coherent sequence of CTE courses of at least three and one-half credits, in addition to the AAS degree curriculum at the postsecondary level. Dual credit is fairly extensive in this consortium, in both the academic and CTE areas.

The Miami Valley Tech Prep Consortium in Dayton, Ohio (OH), aligns its tech prep program with the state definition, in that it is a selective program, keeping relatively low enrollment compared to other consortia included in this study. Admission is based on at least average academic performance, good attendance, a positive attitude toward school, and supportive nominations by teachers and counselors. Compared to traditional CTE programs, tech prep poses greater academic demands on students, particularly math and science, and provides a comprehensive technical foundation rather than mastery of particular technical skills. Within these parameters, a tech prep student is one who is enrolled in a state-sanctioned tech prep program, beginning in Grade 11, and continuing through the AAS degree in the CTE and "employability competency" delivery system. Because of its extensive components and selective admission, this consortium's approach is classified as a comprehensive, structured tech prep model (Hershey et al., 1998). It also fits the specification of the original Tech Prep Associate Degree (TPAD) model proposed by Parnell (1985). This consortium has placed special emphasis on ensuring that tech prep students are prepared for college-level studies, and encourages students to take the community college's academic placement exam while still enrolled in high school. Based on their test scores, students become eligible to enroll in college studies, or they receive developmental instruction preparing them for subsequent college-level course work.

The Mt. Hood Educational Partnership in Mt. Hood, Oregon (OR), defines a tech prep student as a one who chooses, in Grade 11 or 12, to enroll in a major course of study in a 2+2 tech prep program that is linked to an AAS degree offered by the community college. A tech prep course of study is an integrated program of academic and CTE subjects designed for students in Grades 11 and 12 and further postsecondary education. Standard courses needed for a high school diploma are included in a tech prep course of study, plus electives that provide students for the AAS degree. Advanced or dual credits in either academic or CTE courses may be included in the 2+2 course sequence. The consortium's goals include ensuring that tech prep participants acquire a good foundation for an associate degree, certificate, or college credits, that they advance into the 1st year of college without having to repeat course work (i.e., without remediation), and that they advance in their college programs successfully. Though the target population for tech prep is diverse, most students who choose tech prep in this consortium appear to be doing so as an alternative to the college prep curricula.

In the Guilford Tech Prep Consortium in Guilford County, North Carolina (NC), tech prep (known locally as college tech prep) has served as a means of replacing the general education curriculum, providing students with a strong academic and CTE foundation. The core academic degree requirements for tech prep are similar to those for college prep, with the exception that a tech prep course of study requires students to complete four sequenced CTE courses, and these courses substitute for the foreign language requirement of college prep. Students who complete the core tech prep curriculum in high school are considered college tech prep (CTP) completers. In addition to its CTP program, this consortium supports a thriving youth apprenticeship program that includes 11 youth apprentice options. Each apprenticeship is based on the same core components of the 2 years of CTP course work in high school, followed by a 2-year AAS degree program at a 2-year college (often with a scholarship), combined with a paid work experience with sponsoring businesses. This consortium uses a 2+2 approach to articulation, providing advanced standing and dual credit on a more limited basis.

In the San Mateo Tech Prep Consortium in San Mateo County, California (CA), tech prep students are identified when they complete an articulated CTE course in high school that is part of tech prep. A tech prep course of study includes a sequence of related courses within a specific technical area. Thus, the articulation component is a driving feature in this consortium. Articulation agreements between high schools and the three community colleges in the district provide dual credit or advanced placement articulation options for students in CTE courses. Since the beginning, tech prep students were identified by their completion of articulated vocational courses and receipt of tech prep certificates. When students matriculated from high school to community college, their tech prep certificates acted as a sort of "proof of purchase," indicating to the college that the student had mastered the skills and knowledge offered in a secondary-level CTE (or tech prep) course. The 2+2 model utilized in this consortium follows the vocational tech prep model identified by Hershey et al. (1998). Other components, such as career guidance and work-based learning, are viewed locally as beneficial for tech prep and central to the School-To-Careers (STC) initiative, which has received heavy endorsement by the state.

Student Population and Sample

Within each consortium, a sample of tech prep participants and non-participants was selected to provide the basis for the causal-comparative analysis of student outcomes. Local definitions (refer again to Table 2) provided the parameters for selection of tech prep participants to ensure this research was sensitive to the unique conceptualizations of tech prep used in each consortium, thereby enhancing the validity of the assessment approach. Tech prep programs such as those in East-Central Illinois (IL) and Guilford County (NC) that emphasize youth apprenticeships can be quite different from programs that emphasize CTE course work delivered by the vocational high schools in Metro, the joint vocational schools in Miami Valley (OH), or the comprehensive high schools in Golden Crescent (TX). By utilizing a research design that treated each case individually, we were able to delve deeply into results unique to each consortium, and these results offered the potential to contribute to greater understanding of various tech prep models and approaches.

In total, almost 4,600 students were selected for the outcomes study, with roughly equivalent numbers of tech prep and non-participants in each group. (Refer to Table 3 for student population and sample sizes for each consortium). Depending upon the population, tech prep participants were selected in proportion to their representation in the 1995, 1996, and 1997 high school graduation classes, which we refer to as *panels*. Since tech prep grew in most consortia over this time period, the samples were more heavily weighted toward 1996 and 1997 high school graduates, with some consortia combining the 1995 and 1996 groups, or eliminating the 1995 group altogether, because of low numbers. One consortium, the Guilford County (NC) consortium, assisted us in identifying a 1998 group because no tech prep high-school graduates existed in 1995, and local leaders wanted the opportunity to track three panels similarly to the other sites. To support their goals, we complied.

Table 2

Key Features of Tech Prep Initiatives in the Eight Selected Consortia

	East-Central Illinois (IL)	Metro	Hillsborough (FL)	Golden Crescent (TX)
Community	Rural, small town	Urban, suburban, rural	Urban, suburban, rural	Rural, small town
Partners	12 high schools, 1 area vocational center, 1 community college	15 high schools, 1 technical college	19 high schools, 3 adult technical centers, 1 large community college with 4 campuses	17 public school districts (18 high schools), 1 regional career center, 1 community college, 1 upper-division campus of a state university
Goal	To improve educational options for students in the neglected majority.	To increase the comprehensiveness and coordination of high school students' technical education and their awareness of and access to technology careers.	To improve education and work opportunities beyond high school for all students, especially the neglected majority; increase relationships with business partners in the community.	To fully prepare all youth for rewarding careers in a high-quality work force.
Primary TP model/ articulation agreement	Enhanced vocational TP, based on 4+2 agreements with some 4+2+2 arrangements. Youth apprenticeship program for selected students. Articulation agreements placed limited emphasis on course-to-course or program-level articulation.	Integrated TP, interdisciplinary curriculum, articulated credits, and advanced placement; 2+2 approach, with some 2+2+2 programs.	Enhanced vocational TP, 4+2 articulated program with some 4+2+2 programs. Agreements include dual enrollment, time-shortened courses, and course-to-course articulation of technical courses.	Enhanced vocational TP, 4+2 model, with some 4+2+2 programs. Most articulation agreements reflect course-to-course articulation of technical courses and provide dual credit, with enhanced or advanced skills curriculum.
Definition of TP student	Has made a conscious decision to follow a clearly defined sequence of courses to prepare for employment in a TP occupation; offers opportunities for above-average entry wages and potential for growth; and requires advanced technical, problem-solving, and creative-thinking skills.	Student in Grades 11 and/or 12 who is enrolled in TP math and English courses, and who follows a technical career cluster of courses with the intent of entering the postsecondary TP curriculum.	One who has completed at least one technical course in an articulated program by Grade 11, and two courses each of English, science, and mathematics, and who takes an articulated sequence of technical courses the first 2 years of postsecondary education that lead to an AAS degree.	One who is in grades 9–12 and who follows an approved TP sequence of courses leading to postsecondary education and training. A postsecondary TP student has an approved major leading to a state-approved AAS degree.
TP courses	Integrated academic and technical content, workplace skill development, and work-based learning experiences—particularly youth apprenticeship.	Include a sequence of applied classes, as well as courses that integrate vocational and academic content. Internships, paid work placements, and school-based enterprises reflected the various work-based learning opportunities offered to students.	Articulated sequence of technical courses. In the college TP option, students must satisfy a foreign language requirement, and cannot include lower-level courses in the program.	Core curriculum of academic courses and a sequence of career and technical courses of at least 3½ credit hours. Content is aligned with courses taught at the partner college and encourages post-high-school options, including 4-year college.
Highlights	Local businesses were vocal and active partners, encouraging work-based learning opportunities for students, supporting youth apprenticeship programs, and providing work-site learning opportunities to faculty. System focused on linking school-based learning and work-based learning.	Interdisciplinary approaches to academic and vocational integration, secondary to postsecondary transition, and professional development opportunities for high school teachers, college faculty, and local administrators.	While emphasizing applied academics, extended emphasis on standard academic courses with contextual learning strategies. Business and industry contribute to the training and development of faculty and counselors to promote awareness, beginning in elementary school.	Aspires to strengthen business/ industry–postsecondary education relationships. Encourages the use of contextual teaching and learning, and provides professional development workshops for faculty. Regional labor market information links education to the economic needs of the region.

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Table 2 (continued)

	Miami Valley (OH)	Mt. Hood (OR)	Guilford County (NC)	San Mateo (CA)
Community	Urban, suburban, rural	Suburban	Rural	Suburban, few urban
Partners	64 comprehensive high schools feeding into 3 vocational high schools, 1 community college, 1 small business college, 1 four-year university	1 regional educational service district serving 7 high schools, 1 community college district, 1 postsecondary proprietary school	1 school district that includes 14 high schools and 1 area vocational school, 1 community college	19 high schools, 1 community college district (3 community colleges)
Goal	To provide a seamless education pathway from high school to postsecondary education for all students, but targeted to the middle majority.	To ensure that students acquire skills needed in a modern, technologically driven world.	To prepare students to live and work in a highly technological society.	To move students toward high skills and high-wage earnings.
Primary TP model/ articulation agreement	Structured, comprehensive TP model implemented as 2+2 or 2+2+2 arrangements, supported by memoranda of understanding.	Enhanced vocational TP, 2+2 approach. The Tech Prep Associate Degree (TPAD) includes advanced or dual credits in either academic or professional-technical courses.	Structured, comprehensive TP, 4+2 articulation; advanced-standing credit and concurrent enrollment.	Enhanced vocational TP, 2+2 approach. Driving this model are the articulation agreements that provide for dual credit and advanced-placement articulation options.
Definition of TP student	Enrolled in a state-sanctioned TP program that begins in Grade 11 and continues through the associate degree in the career-technical education and employability competency delivery system.	One who elects to enroll in a major TP course of study in Grade 11 or 12 and follows an integrated program of academic and technical courses that is linked to 2-year AAS degree programs at the local community college.	One who elects to participate in a sequence of technical courses. College TP program has served to replace the general track. Youth apprenticeship based on 2 years of technical courses in high school, followed by a 2-year AAS program.	One who has completed an articulated vocational course in high school that is part of a TP program of study.
TP courses	Include those of an articulated vocational program, and includes at least one applied academic course.	Reflect an integrated program of academic and technical concepts, and are designed to reduce the need for course repetitions in the 1st year of college. Provide more opportunities for acceleration and advanced studies in college programs.	College TP and vocational TP course requirements are similar; vocational TP requires four sequenced technical courses completed as electives, which can be substituted for the foreign language requirement.	Specifically sequenced within a technical area designated as TP by the consortium.
Highlights	Driving the TP curriculum are the skill competencies identified by local business and industry leaders as necessary for employment in particular jobs within an occupational cluster. Faculty work with these partners to develop curriculum based on the identified competencies.	TP curriculum was influenced by the state department of education, state officials, and representatives from the school. Articulated academic courses, career pathways, and links to School-to-Work efforts guided reform. Community members and parents participated in the decision-making process regarding reform efforts.	Has built extensively on the state's early priority for a college TP course of study, supplemented with a solid commitment from local business and industry to the YA model. Business and industry partnerships have resulted in the establishment of shared goals of improving the skill level and quality of the county's entry-level workforce and providing youth with multiple career and educational options.	Deliberate attempt to align the goals and activities of TP with School-to-Work. Career pathways are used to support seamless high school transitions.

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Table 3
Population and sample of institutions and students by consortium

	East-Central Illinois (IL)	Metro	Hills-borough (FL)	Golden Crescent (TX)	Miami Valley (OH)	Mt. Hood (OR)	Guilford County (NC)	San Mateo (CA)	Total
Number of high schools	12	15	19	18	64	7	14	19	168
(number sampled)	(10)	(14)	(6)	(15)	(3)	(3)	(6)	(5)	(62)
Number of secondary area vocational centers	1	3	1	1	0	0	1	0	7
(number sampled)	(1)	(2)	(1)	(1)	-	-	(1)	-	(6)
Number of 2-year or 4-year colleges	1	3	1	2	1	1	1	3	13
(number sampled)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(3)	(10)
Total grads in sample high schools	1,805	UK	17,614	2,763	UK	2,902	3,184	4,482	32,750
(years studied))	('96–'97)	('96–'97)	('95–'97)	('95–'97)	('95–'97)	('95–'97)	('96–'98)	('95–'97)	
Tech Prep graduates in sample high schools	370	UK	954	1,839	UK	530	408	313	4,414
(percentage of total HS grads)	(20%)		(10%)	(34%)		(18%)	(13%)	(7%)	(13%)
Total HS grad. sample	551	626	597	586	348	518	724	622	4,572
Tech Prep HS grad. sample, including TP/YAs	293	310	301	295	192	259	408	313	2,371
(TP HS grad. sample as percentage of total TP HS grads)	(79%)	(UK)	(16%)	(31%)	(UK)	(49%)	(100%)	(100%)	

Note: Unknown (UK) designates consortia uncertain of the amount of overall school and tech prep enrollment. Even though exact estimates were not provided, local officials believed the tech prep sample was an accurate representation of the entire population of tech prep participants.

A systematic random sampling procedure was employed to ensure that the two groups of students were similar, based on high school academic performance as measured by cumulative grade point average (GPA) and/or class rank percentile (CRP) at the time of high school graduation. By controlling for academic performance, we attempted to enhance comparison of the two groups on dependent measures associated with post-high school education and employment outcomes, such as college enrollment, persistence, and completion. This sampling plan provided some control over academic performance during high school, a known predictor of college enrollment and completion (Pascarella & Terenzini, 1991), which were principal outcomes examined in this study. We acknowledge that this approach constrained our ability to assess the impact of tech prep on secondary educational outcomes, such as high school attendance, and achievement. We thought this was justifiable because, thus far, almost all tech prep research focused on the secondary level (see, for example, Bragg, Layton, & Hammons, 1994; Elliott, 2000; Hershey et al., 1998). To identify and understand outcomes at the postsecondary level, it was important to select samples that allowed for comparison of participants and non-participants, taking into consideration students' academic ability during high school.

Figure 1 shows the percentage of tech prep participants (TP), including a sub-group of youth apprentices (YA) in two sites, compared to non-participants (NTP). Apparent from this graph is the fact that the tech prep participant and non-participant groups were not different on percentage of students with a GPA of 3.00 or below, and these results help to confirm the similar distribution of the two study groups in each site on the academic performance variable. (See tables in Appendix A for analysis of cumulative GPA and/or High School Quartile Rank (HSQR) for each consortium.)

In addition, Figure 1 provides clear indication of the different target groups for tech prep among the eight consortia, with some consortia having two thirds or more of their tech prep participants at a GPA of 3.0 or below—for example, East-Central Illinois (IL) and Guilford County (NC)—and other consortia—for example, Metro, Hillsborough (FL), Golden Crescent (TX) and San Mateo (CA)—having about 50% of their tech prep participants at a GPA of 3.0 or below.

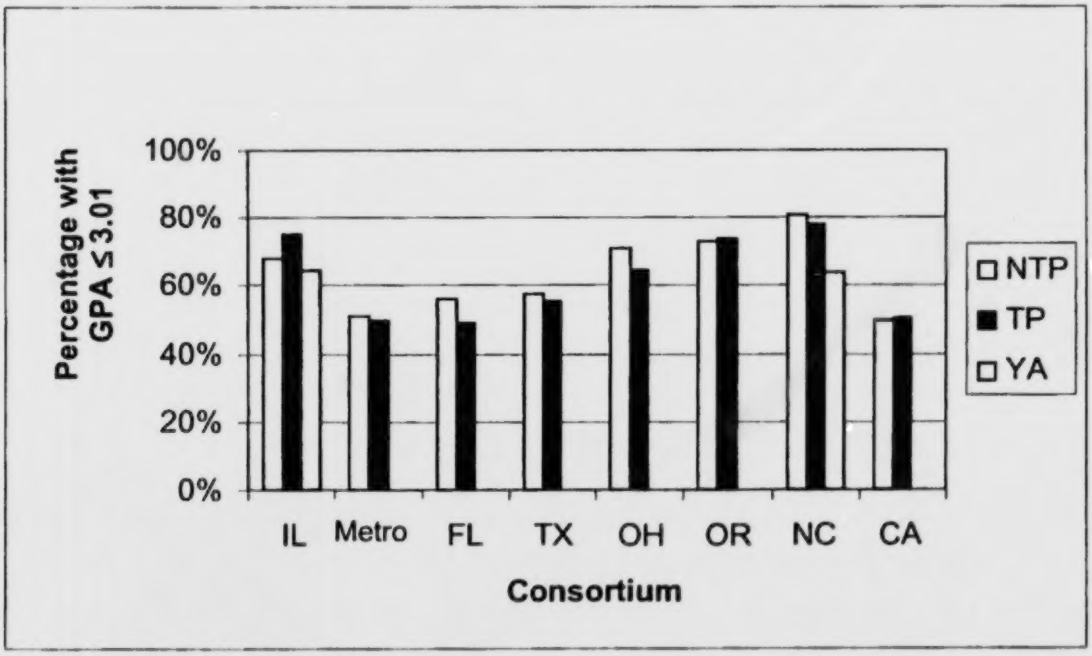

Figure 1. Percentage of tech prep participants, non-participants, and youth apprentices with high school GPA of 3.01 or below, by consortium.

To select the study groups, first a random sample of tech prep participants was obtained (approximately 300 in each site, which, in most sites, represented the majority of all tech prep participants), ensuring representation indicative of the entire population of tech prep participants. Once the tech prep participant group was selected, a random sample of non-participants was drawn, attempting to ensure that the two study groups were equivalent on high school academic performance as measured by cumulative GPA (as shown above in Figure 1) and/or high school percentile rank (HSPR) at high school graduation. Care was also taken to ensure that the two groups were similarly represented within the consortium by selecting an equivalent number of tech prep participants and non-participants by school, and also by graduating class or panel, as mentioned previously.

Data Collection Methods

This section provides a description of various research methods employed in this mixed-method study, including the case study methods that provided a foundation for this student outcomes study. Even though detailed case study narratives are not included in this report—because they are presented in previous reports published by National Research Center for Career and Technical Education (NRCCTE)—the methods are discussed briefly herein to provide a general understanding of the methodological approach used in this study.

Case Studies

Though case studies are not the focus of this document, knowledge about tech prep programs gained by our research staff through fieldwork was very valuable to producing the quantitative results.

Over a 4-year period, more than 500 interviews were conducted with purposively-selected teachers, counselors, parents, employers, and other key informants representing 62 high schools, 6 area vocational centers, and 10 2- and 4-year colleges in the eight consortia. More than 250 interviews of 30- to 60-minute duration were conducted with students (tech prep participants and non-participants) in a one-on-one or small-group format, usually involving two to four individuals. Most students were selected purposively because of our desire to learn about particularly meaningful aspects of their participation in tech prep; however, some students were chosen at random to contribute to our understanding of tech prep programs as perceived by other tech prep participants and students in the general population.

In our initial round of interviewing, most personal interviews were tape recorded and later transcribed, but as our fieldwork proceeded, we found tape recording sometimes impeded our ability to gain candid insights. In these situations, we took handwritten notes during and after the session to maximize trust between interviewer and interviewee. Content analysis of researcher notes was done utilizing an emergent framework for classifying responses. Sometimes descriptive statistics were used, though most qualitative results were represented in narrative text to provide rich, thick descriptions of tech prep program implementation and the forces influencing changes in these programs. Triangulation was employed by examining multiple data sources and numerous informant perspectives, maximizing our confidence in the trustworthiness of our results (Lincoln & Guba, 1985). We also used member checking, asking key informants from each consortium to review and comment on the clarity, accuracy, relevance, and veracity of our writing. These member checks were conducted in 1999 (Bragg et al., 1999), and again in 2001 after case study reports were drafted, and before final reports were completed.

Transcript Analysis

During the fall of 1998, high school and community college transcripts were collected from the six original sites, and the acquisition of transcripts continued through winter 1999 for the two newly added consortia. Ultimately, we obtained high school transcripts for 98% of the entire CC&B sample. We also obtained 1,774 usable transcripts representing virtually all students who matriculated to the main postsecondary institution—a local community college except in one case, constituting 39% of the entire sample.

Two years later, in fall 2000–winter 2001, community college transcripts were secured from each site once again, providing transcripts for nearly all students in the entire CC&B sample who had matriculated to the main postsecondary institution. With this transcript acquisition, we enhanced the CC&B transcript file with 510 transcripts, and updated the transcripts of another 882 students. Adding these new records to the file of 892 transcripts that were unchanged from the previous 1998–99 acquisition, the complete community college transcript file totaled 2,284, representing 49% of the entire CC&B sample.

The CC&B Database. Once transcripts were collected in 1998–99, an electronic database was created and maintained at the University of Illinois at Urbana-Champaign (UIUC), referred to as the Community College and Beyond (CC&B) dataset. Once assembled, all personal information identifying a student was removed, and students were referred to by an omnibus code number, in accordance with the human subjects review procedures of UIUC.

For additional detail regarding the handling, coding, or entry of transcript data, readers are encouraged to seek the original report about the CC&B study in Bragg et al. (1999). In that report, detailed information is provided about course coding according to the Classification of Secondary School Courses (CSSC) and the Secondary School Taxonomy (SST), two commonly used coding systems utilized by the National Center for Educational Statistics (NCES). The SST was developed as a uniform framework for organizing the high school curriculum and classifying transcript data (Gifford, Hoachlander, & Tuma, 1989). It was first developed for use with the High School and Beyond 1980 Sophomore Cohort Transcript study, and has since been used in the 1994 High School Transcript Study (HSTS), and the on-going national evaluation of School-To-Work (personal conversation with J. Hamison, March 1998). (For notes on how the SST coding was conducted, see Bragg et al., 1999, Appendix D.) Furthermore, we used the Classification of Instructional Programs (CIP) to code community college courses. This classification source was supplemented with Adelman's (1995) New College Course Map (CCM). The CIP and CCM were used in the postsecondary transcript analyses for the National Longitudinal Study of the High School Class of 1972 (NLS–72) and the High School & Beyond Sophomores (HSB/So).

Follow-Up Survey

In addition to transcript analysis, a follow-up survey, referred to as the *Education-To-Careers Follow-Up Survey*, was conducted in 1998–99 and 2001 to identify students' high school experiences related to academic preparation, as well as to their college and work after high school graduation. Survey results were used to supplement the transcript data, particularly with respect to demographic characteristics. Response rates between 39% and 62% were obtained from the eight consortia, providing results on a total of 2,224 (48%) of the CC&B sample.

The original survey was a 36-item questionnaire comprised of four sections: a) high school educational experiences and work, b) transition to college and college experiences and expectations, c) post-high-school work experience and expectations, and d) demographics and personal characteristics. (A copy of this instrument is presented in Bragg et al., 1999. Additional detail on the process of survey development, pilot testing, and administration, including procedures for handling non-response, are provided in that report.)

In spring 2001, a second version of the *Education-To-Careers Follow-Up Survey* was developed—this time for administration via telephone. Keeping most of the survey consistent with the 1998 version, UIUC staff added new questions having to do mostly with college enrollment, completion, and employment. The services of Consumer and Professional Research (CPR), Inc., Chicago, Illinois, were employed because this organization conducted a telephone follow-up of non-respondents of the initial 1998 survey. Between early August and late September, multiple attempts were made to telephone interview the entire CC&B sample—resulting in usable responses from approximately 650 of the entire CC&B sample, with about 85% of these being respondents to the first follow-up survey.

Document Analysis

Throughout the entire 4-year data collection period, a number of documents and artifacts were collected and analyzed. These documents range from school and college catalogues and curriculum and counseling guides to a voluminous array of consortium artifacts (e.g., final reports, brochures, strategic plans). How these various documents were used depends to a great extent on what they contained. For example, school and college catalogues were invaluable resources in the coding and data-entry processes pertaining to student course taking, and in the creation of variables. Other documents, such as strategic plans or materials from teacher training workshops, provided contextual information helpful in understanding the intricacies of tech prep implementation. Clearly, an extremely important aspect of our data collection was the systematic acquisition and analysis of documentation, and it would be unfortunate to overlook the critical role this information played in this study.

Variables

Table 4 lists variables constructed and used in the statistical analysis presented in this report, according to the major categories that cluster similar types of variables. The variables are also cross-walked with the primary data sources.

Table 4

Variables Clustered by Major Categories and Data Sources

Category	Variable	Data source
Demographics and background characteristics	• Gender • Racial/ethnic identification • Limited English proficient • Marital status • Mother's and father's education level • Family income • Student's present residence • Utility of high school	The primary source is the 1998 *Education-To-Careers Follow-Up Survey*, with supplementary information gleaned from high school transcripts and institutional records.
High school participation & performance	• High school from which graduated • Date of high school graduation • Tech prep status (school-identification and self-report) • Class rank percentile at graduation • Cumulative GPA at graduation • Math course-taking: HS math GPA; no. semesters math; level of math courses taken; 12th-grade math courses taken; lowest math taken; highest math taken; progress in math (highest math to lowest math) • Science course-taking: science GPA; no. semesters science; level of science courses taken; 12th-grade science courses taken • English course-taking: English GPA; semesters of English courses taken; 12th-grade English courses taken; basic, regular, CP, and AP/honors English courses taken • NCES concentration: no. and type of career areas taken • NCES specialization: no. and type of career areas taken • NCES description of college prep • Articulated CTE, math, and science courses taken; specific career areas with articulated credit; amount of articulated courses taken in above areas • Work-based learning: participation in WBL overall; participation in specific types of WBL; participation in tech prep (self-report)	The primary source is high school transcripts, collected in fall 1998 for original six sites, and winter 1999 for two additional sites. Information about participation in WBL and self-report of tech prep participation came from the 1998 *Education-To-Careers Follow-Up Survey*.

Category	Variable	Data source
High school work experiences	• Whether student held job in high school • Estimated hourly wage for primary job held in high school • Total hours worked in last job held before high school graduation	The primary source is 1998 *Education-To-Careers Follow-Up Survey.*
Transition to college	• Enrollment in 2-year only, vocational only, 2-year and vocational, 4-year, 2- and 4-year, 4-year and vocational • Any 2-year attendance • Any 4-year attendance	The primary source is the 1998 *Education-To-Careers Follow-Up Survey*, with supplementary information coming from community college transcripts.
College placement	• Continuing participation in tech prep: HS tech prep participants who were classified as continuing tech prep at the postsecondary level • College placement: college placement tests scores, whether the student was ready for college or not by CTE standard and by transfer standard • College placement in math by CTE standard and transfer standard • College placement in reading by CTE standard and transfer standard • College placement in writing by CTE standard and transfer standard	The primary source is community college transcripts (1998–99 and 2000–01).
Postsecondary education outcomes	• College enrollment: enrolled at community college • Cumulative hours earned: cumulative hours earned remedial; cumulative hours attempted and earned; cumulative remedial hours attempted and earned • Credentials earned in AA or AS, AAS, AA+AAS, Certificate, AA/AS + Certificate, AAS + Certificate; any degree or certificate; no degree or certificate, still enrolled; no degree or certificate, not enrolled • First-term enrollment: first-term hours earned, first-term college-level hours earned, first-term hours attempted and earned; first-term remedial hours attempted and earned	The primary source is community college transcripts (1998–99 and 2000–01).
Post-high school work experience	• Employment status: unemployed/not seeking; unemployed/seeking; part-time; full-time; military • Number of jobs after high school: none, 1, 2, 3, 4, and 5 or more jobs	The primary source is the 1998 *Education-To-Careers Follow-Up Survey.*

Category	Variable	Data source
	• Months worked at primary job at present: less than 6 months; 7–12 months; 13–24 months; 25–35 months; more than 36 months • Job type: unskilled; semi-skilled; skilled or technical; professional • Hourly wages at primary job at present: no salary (zero); less than \$5.25; \$5.26–6.00; \$6.01–7.00, and so forth, to more than \$13.00 • Job expectation: unskilled; semi-skilled; skilled or technical; professional • Satisfaction with primary job at present: 5-pt. Likert-type scale • Confidence in reaching ultimate career goal: 5-pt. Likert-type scale	

Data Analysis

As mentioned previously, data analysis was conducted on a consortium-by-consortium basis because of differences in local definitions, policies, and approaches utilized by each consortium. By analyzing data on an individual consortium basis, the results would not mask particular and unique findings with respect to particular consortia, as would undoubtedly have occurred had we treated the entire CC&B sample as one. In fact, since our sampling of sites sought different local settings, as well as varied models and approaches to tech prep (e.g., College Tech Prep, General Tech Prep, Tech Prep/Youth Apprentice), it was important to understand students' experiences and outcomes relative to each approach. Both in terms of the figures appearing in the main text and in appendix tables, results appear on a consortium-by-consortium basis.

One additional comment is useful here: Our intent was certainly *not* to judge one consortium (and the educators and students therein) better than another consortium, but to view these eight consortia as exemplars or models that had reached a level of mature implementation, and that had a sufficient longevity of student participants engaged in tech prep to have matriculated from high school to various postsecondary education and work options. Because of the commitment of local leadership in each consortium to tech prep and the desire to learn more about how their own tech prep programs were working and how they were influencing student outcomes, we were successful in engaging long-term support for this research from local officials in the eight sites. From our perspective, each consortium possessed unique and compelling policies and practices, and each resided in a particularly interesting setting (local and state). In each of the reports produced for this study, we attempted to discuss major results, as well as detailed nuances, of various local approaches—deepening our understanding of how student outcomes are related to tech prep implementation.

Second, our data analysis centered on group comparisons, primarily between the tech prep participant group and a similar group of non-participants drawn from the general student population. With respect to all variables specified in Table 4, the analysis included tests for group differences, utilizing appropriate statistics, indicating significant differences between groups, or associations between variables and group affiliation. With respect to two consortia—East-Central Illinois (IL) and Guilford County (NC)—we subdivided the tech prep participant group into two groups: tech prep youth apprentices, and general tech prep participants. In most cases, results do not differ for these groups, and they are presented separately only when group differences were found.

Further, our data analysis included a closer examination of specific panels of tech prep participants and non-participants (1995, 1996 or 1997, and 1998 in Guilford County, (NC) only). An analysis of separate panels was used because having multiple panels gave us information over about a 3-year period, as tech prep programs were maturing.

RESULTS

Results and discussion are presented in this section to address the six specific research questions comparing tech prep participant and non-participant groups on the following sets of variables: a) demographic, personal, and background characteristics; b) high school course-taking, performance, and related educational and work experiences; c) transition from secondary school to postsecondary education, including readiness for college-level studies and continuation of tech prep participation; d) college enrollment, persistence, and completion of college; and e) students' experiences in employment post-high-school graduation.

Demographics and Background Characteristics

To gain a better understanding of the demographic and background characteristics of students participating in tech prep, and to discern their similarities with and differences from the general student population, the following research questions were addressed: What are the selected demographic, personal, and background characteristics of tech prep participants, and how do these characteristics compare to a similar group of students identified as non-participants? Do these characteristics differ for different panels of tech prep participants and non-participants?

Appendix Tables B1–10, provide a comparison of tech prep participants (sometimes showing separate analysis for tech prep youth apprentices) and non-participants on gender, race/ethnicity, education level of mother and father, family income, and so forth. Though not a demographic characteristic, Tables B1–10 also display results for tech prep participant and non-participant groups on their perceptions of the utility of high school. Results presented in this section come primarily from the 1998 *Education-To-Careers Follow-Up Survey*, with information on gender and race/ethnicity supplemented by high school transcripts and institutional records transmitted to us by local consortium leaders.

Gender

Figure 2 reveals the gender of tech prep participants involved in the eight consortia. Except for three consortia—East-Central Illinois (IL), Metro, and Miami Valley (OH)—about the same proportion of females were enrolled in tech prep programs as in the non-tech prep group, but these results do not speak to enrollment in particular career fields, which are detailed later in this report.

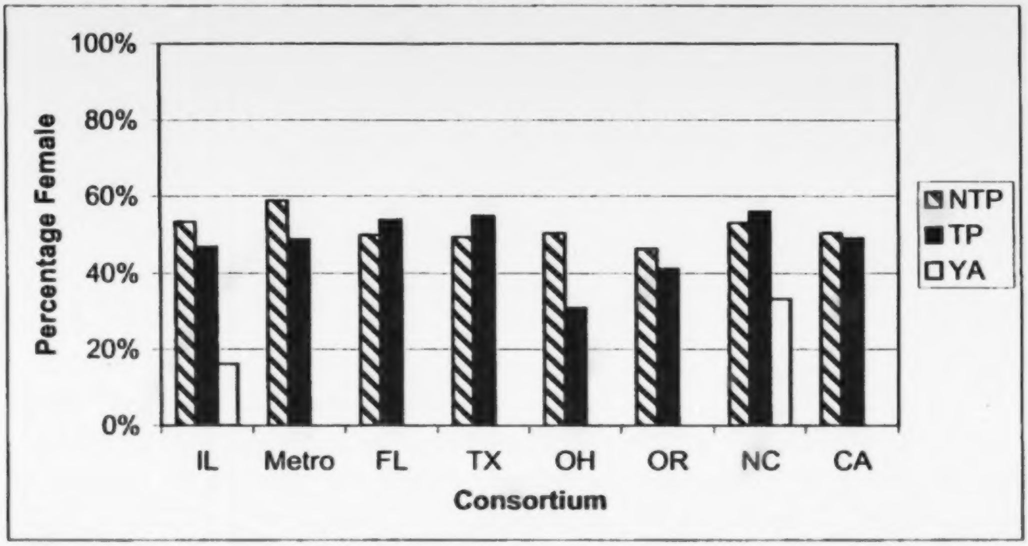

Figure 2. Percentage of tech prep participants, non-participants, and youth apprentices who are female, by consortium.

In the East-Central Illinois (IL), Metro, and Miami Valley (OH) consortia, where tech prep participation was associated with gender, fewer females were participating in the overall tech prep initiative than was true in other consortia. All three consortia offered programs with large enrollments in career-technical areas that traditionally attract more male than female students, including trade and industrial programs classified according to the Secondary School Taxonomy (SST) as precision production, technical/communications, and specialized labor. For example, Miami Valley (OH) offered tech prep programs in industrial and manufacturing occupations that were coded technical/communications (TC). Of about 125 tech prep participants classified as concentrators in TC programs, according to the National Center for Educational Statistics (NCES) classification (see Houser, 1995; Levesque et. al., 2000), only about 15% were female. Metro also had large enrollments in TC and precision production (PP) programs and, while gender was more balanced in these programs (22% female among concentrators in TC programs; 36% female among concentrators in PP programs), these largely-male programs accounted for a sizeable proportion of enrollment in the overall tech prep initiative.

Moreover, in two consortia—East-Central Illinois (IL) and Guilford County (NC)—youth apprentice programs were offered, and these programs were a priority of these two consortia during their early years. (Whereas gender differences were not evident between the overall tech prep participant and non-participant groups in Guilford County (NC), differences were found in the youth apprentice group, as compared to the general tech prep participant group, with fewer females enrolling in the youth apprenticeship than in the general tech prep program.)

Though not apparent in other consortia, an important change occurred in the gender composition of youth apprentices from 1996 to 1997 in East-Central Illinois (IL). In this consortium, the proportion of female apprentices went from only 5% in 1996 to 30% in 1997.

Our fieldwork revealed that there had been a concerted effort to recruit more females into youth apprenticeships by adding programs in business and health occupations, and by emphasizing all aspects of the industry in manufacturing and industrial occupations (Bragg, et al., 1999). This resulted in a much higher percentage of females in the 1997 panel than in previous panels.

Race/Ethnicity

In terms of minority status, tech prep participants mirrored the general student population represented in the non-participant group (see Figure 3). In fact, minority enrollment did not differ substantially from the general student group in any consortium except Metro, where more African-American students were evident in the non-participant group than the tech prep group. Even so, the vast majority of students in both groups had a minority-group affiliation. Looking at these results across all consortia, we did not find differential participation in tech prep by minority status—suggesting minority students were being tracked into tech prep programs, as has been observed of vocational education in earlier years (see, for example, Oakes, 1995, and Wilms, 1977).

Also, while comparison of consortia on race/ethnicity was not our goal, it is interesting to note substantial variation in race/ethnicity across the eight consortia. Specifically, in the Metro, Hillsborough (FL), Golden Crescent (TX), Guilford County (NC), and San Mateo (CA) consortia, minority enrollment was much higher than in the East-Central Illinois (IL), Miami Valley (OH), and Mt. Hood (OR) consortia. These differences can be accounted for by the distinct differences in race/ethnic make-up of the local communities, with some consortia having much larger minority populations than others. Race/ethnicity did not vary by panel within the tech prep participant group; neither were any interpretable differences observed within the non-participant group.

Family Income

Figure 4 shows that family income, which provides an indication of socioeconomic status, was comparable for the tech prep participants and non-participants in all consortia, even though family income varied somewhat from one consortium to another. Results were consistent across panels, indicating family income for tech prep participants did not differ from one group to another within each consortium.

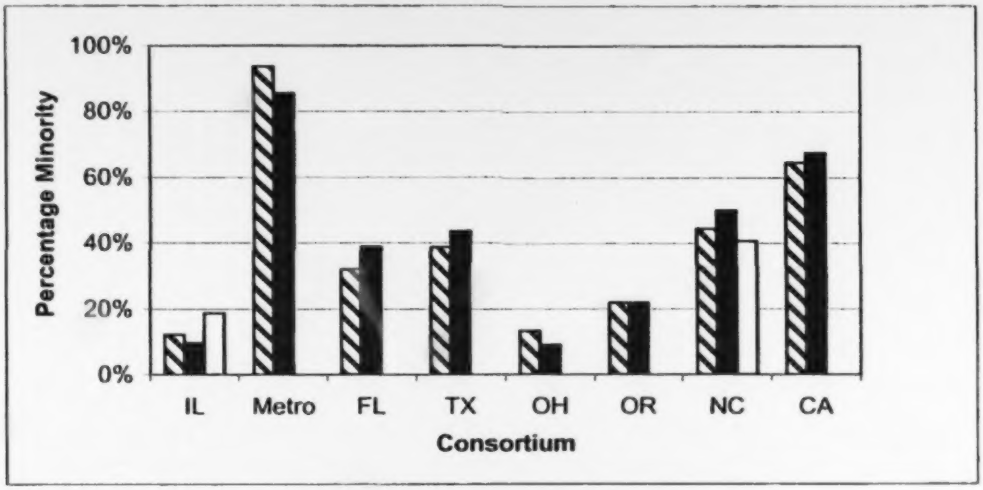

Figure 3. Percentage of tech prep participants, non-participants, and youth apprentices who are minority, by consortium.

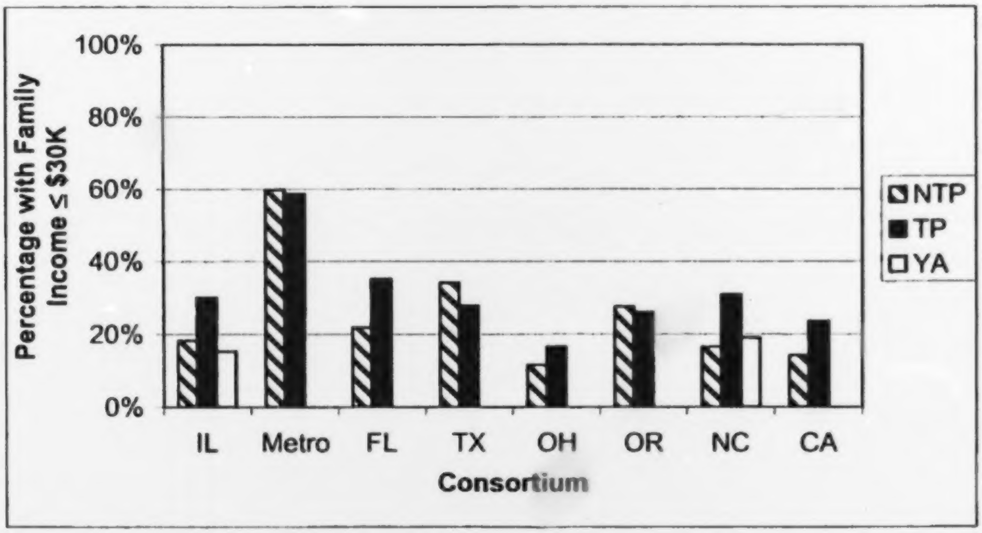

Figure 4. Percentage of tech prep participants, non-participants, and youth apprentices who have family income under $30,000, by consortium.

Parents' Education Level

Results shown in Figures 5 and 6 reveal that the education level of mothers and fathers was distributed similarly for the two study groups, with the parents of tech prep participants slightly less likely to have attended college than those of the non-participant group. This result was not pervasive, however. It reached statistical significance in the Guilford County (NC) and Hillsborough (FL) consortia only, and then among fathers alone. Mothers of youth apprentices in East-Central Illinois (IL) were an exception. There, youth apprentice mothers were more highly educated than mothers of the general tech prep participant group.

Even though the tech prep participant and non-participant groups did not differ on family income, we did find significant differences in mothers' education within the tech prep participant panels, with mothers of students in the '96 panel having less college education than those in the other two panels. In Miami Valley (OH), fathers of tech prep participants in the '97 panel were more highly educated than in the '96 panel.

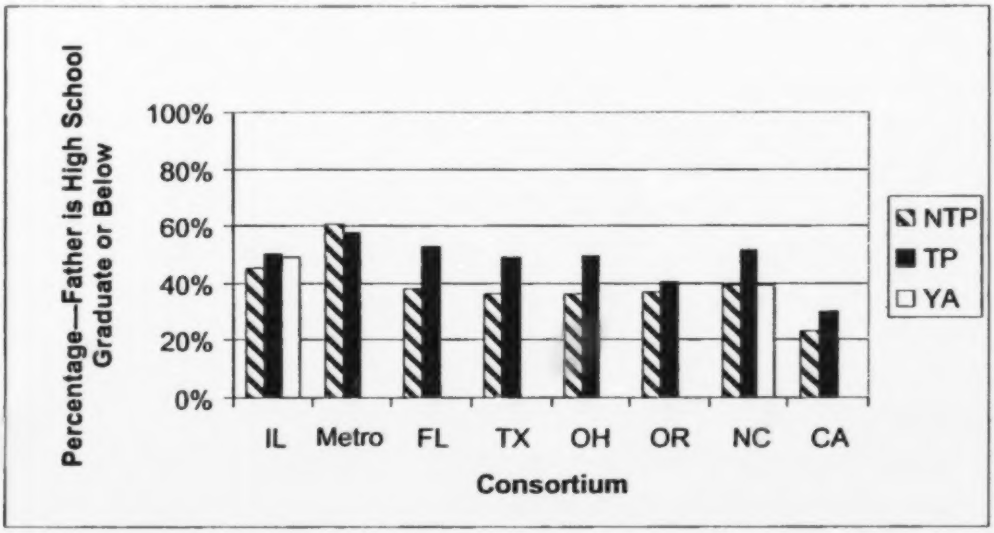

Figure 5. Percentage of tech prep participants, non-participants, and youth apprentices, by fathers' education level and consortium.

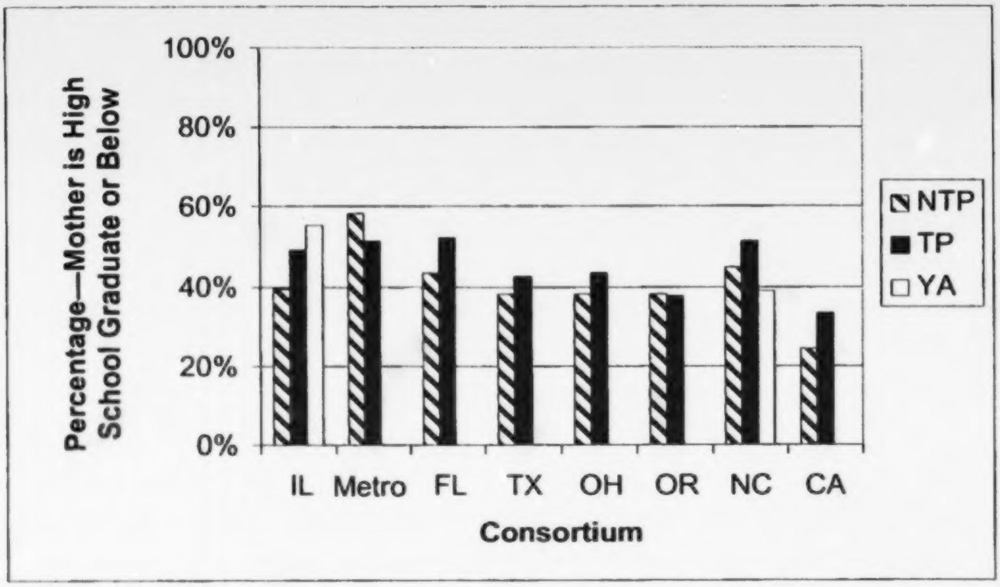

Figure 6. Percentage of tech prep participants, non-participants, and youth apprentices, by mothers' education level and consortium.

Marital Status and Residence

In most consortia, well over 80% of the two study groups were single, and about 60% were living at home in their family residence. Though marital status and residence did not differ significantly for tech prep participants and non-participants in any consortium, it is interesting to note some variation among sites in the percentage of students living at home. For example, whereas about 70% or more of students in the Metro, Guilford County (NC), and San Mateo (CA) consortia lived at home, only 60% or fewer of the students in the Golden Crescent (TX) and Mt. Hood (OR) consortia did so. No doubt, some of this variation is accounted for by differences in the cost of local housing in urban versus rural areas in the different regions of the country.

Finally, the '96 panel was less likely to be living at home than the '97 panel, which seems logical since as students mature, they are more likely to move out of the family home to secure other living arrangements. However, this trend was statistically significant only in the East-Central Illinois (IL) consortium, as well as among non-participants in Metro.

Perceived Utility of High School

The *Education-To-Careers Follow-Up Survey* asked respondents to indicate their perception of the usefulness of what they learned in high school, once they had graduated. Respondents from each consortium provided results, with tech prep participants' responses paralleling non-participants. As shown in Figure 7, few respondents from either study group indicated that they found high school very or extremely useful. The most positive groups were tech prep participants in East-Central Illinois (IL) and Golden Crescent (TX)—though neither was statistically different from the non-participant groups—and both study groups in Mt. Hood (OR), which did not differ from one another. In Guilford County (NC), a significant difference was revealed between the study groups, favoring the non-participant group. Perceived utility of high school did not vary by panel within either the tech prep participant or non-participant groups.

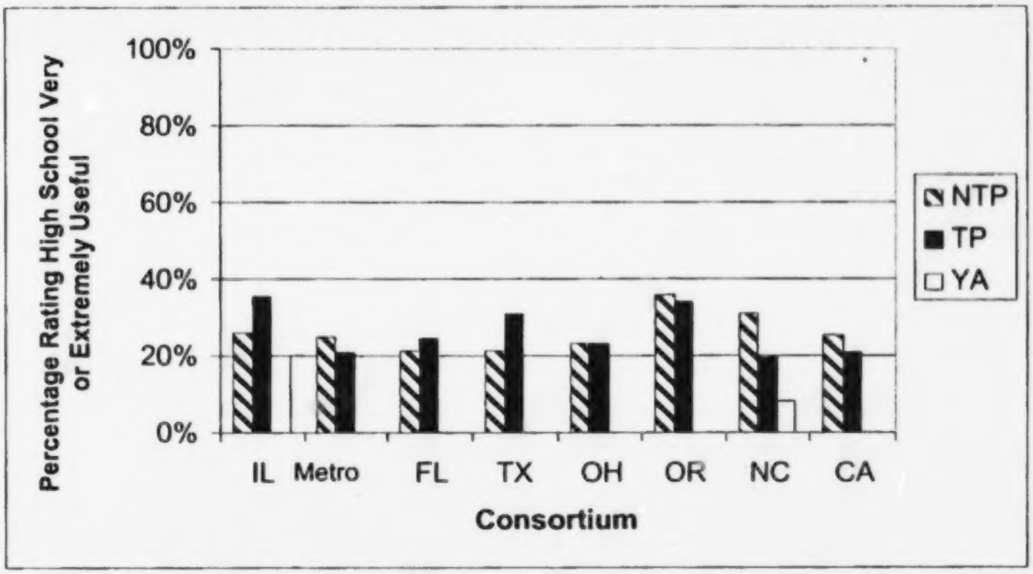

Figure 7. Percentage of tech prep participants, non-participants, and youth apprentices who found high school very or extremely useful, by consortium.

Secondary Education Course-Taking, Performance, and Related Experiences

This section presents results for secondary school course-taking in math, science, English, and CTE; grades received in these subjects; and related educational experiences for tech prep participants and non-participants. The specific research questions this section addresses is: What are participants' course-taking patterns and performance at the high school level—particularly math, science, English, and CTE—and how does this group of tech prep participants compare to non-participants? Moreover, does the course-taking and performance in the specified areas differ over time for tech prep participants and non-participants? Group differences and associations between academic and CTE course-taking and tech prep status are displayed in tables appearing in Appendixes C–J.

To facilitate the discussion of results pertaining to secondary course-taking, the minimum high school graduation requirements of each consortium are presented in Table 5. This table reveals variation among consortia in academic requirements specified for all students; this information is valuable to interpreting course-taking behaviors for tech prep participants and non-participants, especially in the core academic subjects of math, science, and English. This table provides information that is useful to interpreting results pertaining to secondary education course-taking throughout this report.

Math Performance and Course-Taking

This section focuses on results pertaining to math cumulative GPA and various course-taking behaviors (total semesters, lowest taken, highest taken, etc.). Results are presented for the tech prep participant and non-participant groups, and panels within these groups when significant differences were found. (Appendix C contains statistical tables on math performance and course-taking for all eight consortia.)

Math Performance. The secondary math GPA at high school graduation of tech prep participants and non-participants ranged from 2.1 to 2.7, which is equivalent to a grade of C to B-. Generally, tech prep participants performed comparably to their non-participant peers, with the exceptions of Miami Valley (OH) and East-Central Illinois (IL) consortia. In Miami Valley (OH), tech prep participants had a higher cumulative math GPA than the non-participant group. In Illinois, the non-participant group out-performed the participant group. There was no significant difference in math GPA from panel to panel after controlling for tech prep status, except in East-Central Illinois (IL) and Miami Valley (OH), and the differences were found in the non-participant group. In East-Central Illinois (IL), the later panel of non-participants had a higher cumulative math GPA than earlier panels; in Miami Valley (OH), the change was reversed. (See Appendix C for supporting tables.)

Total Semesters of Math. The average number of semesters of high school math ranged from 5.5 to 7.3, suggesting an average of about 2.5 years to slightly under 4 years of high school math. For the East-Central Illinois (IL), Miami Valley (OH), Mt. Hood (OR), and San Mateo (CA) consortia that had a minimum graduation requirement in math of 2 years[3], a majority of tech prep participants and non-participants exceeded the minimum requirement, and sometimes also exceeded the level of math course-taking of students in other consortia requiring more math. Specifically, the proportion of tech prep participants who took more than 2 years of math ranged from 60% in Mt. Hood (OR) to 95% in Miami Valley (OH), and from 74% in East-Central Illinois (IL) and Mt. Hood (OR) to 90% in Miami Valley (OH) for non-participants. For the four consortia with a minimum requirement of 3 years of math—Metro, Hillsborough (FL), Golden Crescent (TX), and Guilford County (NC)—from 38% in Hillsborough (FL) to 59% in Guilford County (NC) of tech prep participants exceeded the minimum requirement. (See Figure 8 along with the tables in Appendix C for supporting results.)

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[3] During the 1990s, when the students involved in this study were attending high school, minimum graduation requirements increased in all states except Illinois.

Table 5
Minimum High School Graduation Requirements by Consortium

Sites	English	Math	Science	Social studies	Electives	Total credits/ units required
East-Central Illinois (IL)	3 years	2 years	2 year	2 years	1 year (music, art, or foreign language)	19–24[a]
Metro	4 units	3 units	3 units	4 credits	1 1/2 –3 1/2 units[b]	20
Hills-borough (FL)	4 credits	3 credits	3 credits	3 credits	8 1/2 credits 1/2 credit health 1/2 credit fine or practical arts	24
Golden Crescent (TX)	4 credits	3 credits	2 credits	2 1/2 credits	1/2 credit economics 1/2 credit health	21
Miami Valley (OH)	3 units	2 units	1 unit	2 units	1/2 credit health	18
Mt. Hood (OR)	4 years	2 years	2 years	2–3 years*	9 credits applied arts, fine arts, foreign language, and professional-technical education	24–25[a]
Guilford County (NC)	4 courses	3 courses	3 courses	3 courses	1 credit health/PE; 5–8 elective credits[b]; 4 sequential technical courses required for College Tech Prep students	22
San Mateo (CA)	3.5–4 years[a]	2 years	2 years	3 years	1–2 years in a foreign language[a];1 semester health;55–60 credits (1 semester course equals 5 credits)	22

Note: States use different language to express high school graduation requirements. In this analysis, years, credits, units, and courses are standardized so that credits, years, and units are equivalent.

[a] Indicates the requirement varies for high schools within a consortium.
[b] Indicates the requirement depends on the program of study (i.e., College Prep, College Tech Prep, University, State Scholars).

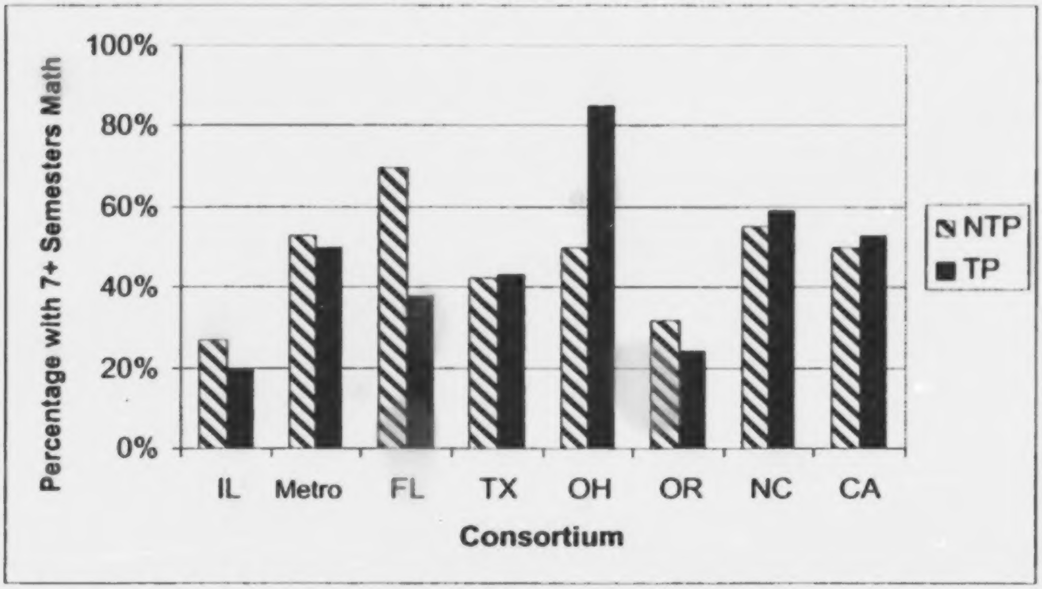

Figure 8. Percentage of tech prep participants and non-participants with seven or more semesters of math, by consortium.

Significant differences were found in the amount of math course-taking between tech prep participants and non-participants in four of the eight consortia, based on mean semesters taken. In the Miami Valley (OH) consortium, tech prep participants took 0.8 semester more math courses in high school than their non-participant counterparts, whereas in the three other sites—East-Central Illinois (IL), Hillsborough (FL), and Mt. Hood (OR)—non-participants took more math during high school, with the difference ranging from 0.3 to 0.8 semesters.

In three consortia—Metro, Golden Crescent (TX), and Miami Valley (OH)—there were significant differences from panel to panel in the number of semesters of math, and these differences were mostly for tech prep participants. In all of these cases, the later panels of tech prep participants took more semesters of math than earlier panels, with the differences ranging from 0.5 to 0.8 semester. Thus, tech prep participants in panel '97 in these consortia were taking at least as much math as '97 non-participants, and in two sites more.

Level of Math Course-Taking. There are significant differences between tech prep participants and non-participants in the amount of total math course-taking that occurred at different levels (basic, regular, AP, & honors) in all consortia except East Central Illinois (IL), and the direction of the differences varied among sites. In four consortia—Golden Crescent (TX), Metro, Guilford County (NC), and San Mateo (CA)—tech prep participants took about the same number of semesters of math as non-participants, but they took a lower proportion of math at the basic level and more math at the regular level than non-participants, with about the same amount of AP and honors math courses taken by both groups (see Figures 9 and 10). In three other consortia—Miami Valley (OH), Hillsborough (FL), and Mt. Hood (OR)—where differences were observed between the study groups in total semesters of math, tech prep participants were taking a higher proportion of basic math, about the same amount of regular math, and a lower proportion of AP and honors math than the non-participant group.

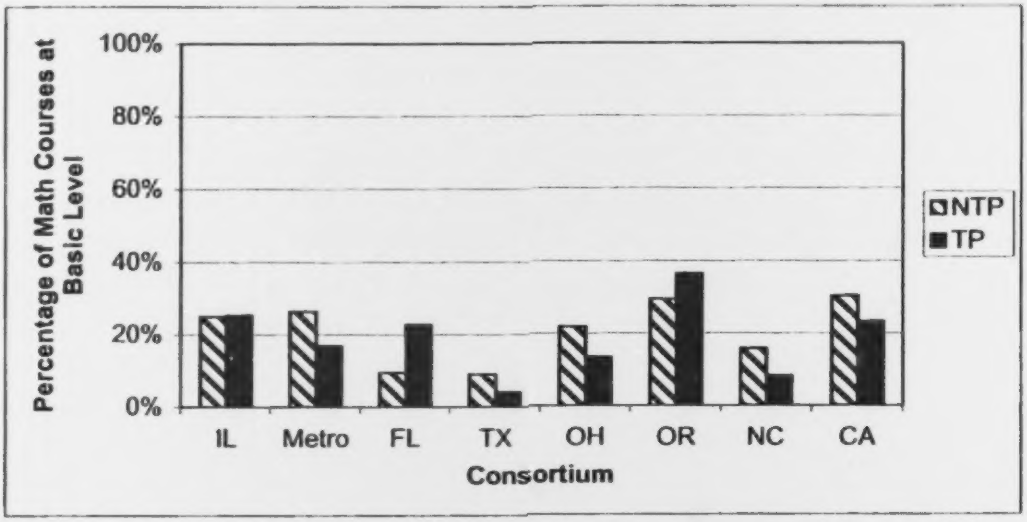

Figure 9. Percentage of math courses taken at basic level for tech prep participants and non-participants, by consortium.

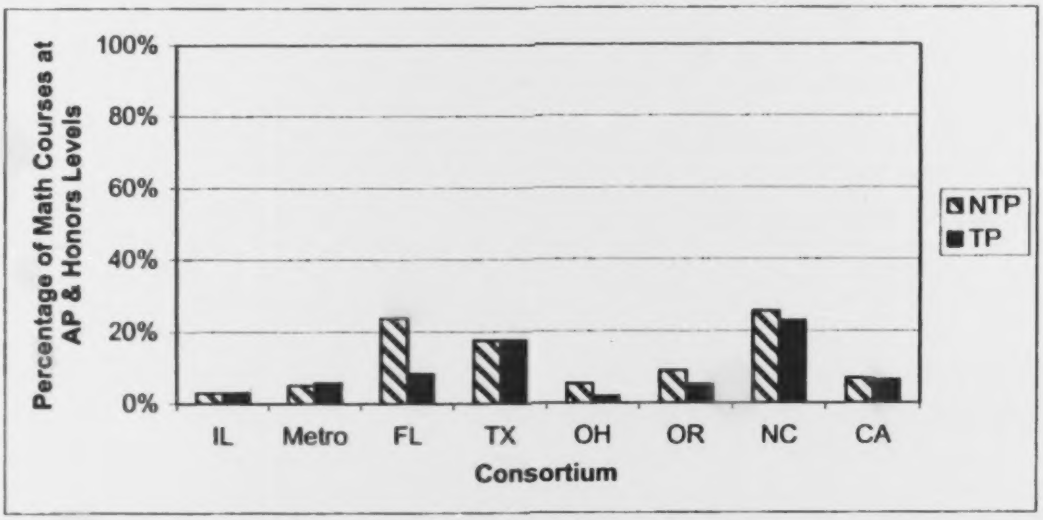

Figure 10. Percentage of math courses taken at AP or honors level for tech prep participants and non-participants, by consortium.

There were also differences between tech prep participants and non-participants in secondary math course-taking among the panels in several consortia. In four consortia, later panels of tech prep participants took a higher proportion of their math courses at advanced levels than earlier panels. In Hillsborough (FL), Miami Valley (OH), and Golden Crescent (TX), the later panel of tech prep participants took a lower percentage of math courses at the basic level than the earlier panels. In Metro, the latest panel of tech prep participants took a significantly greater proportion of math courses at the AP and honors levels than the earlier panels. However, in East-Central Illinois (IL) and Mt. Hood (OR), the panels do not differ in this respect, and in Guilford County (NC) and San Mateo (CA), the panel differences favor the earlier panels.

Results also show that the starting point and finishing point of secondary math varied from consortium to consortium, and often for tech prep participants and non-participants within these consortia. Typically, the starting point for high school math ranged from basic math and pre-Algebra/Algebra I to slightly above Algebra I, whereas the finishing point ranged from about Geometry to Honors Algebra II/Algebra III. For tech prep participants, the percentage that started high school math below Algebra I ranged from 12% to 81% across consortia, and the percentage of students who finished at or above Algebra II ranged from 26% to 96%. For non-participants, the ranges were smaller for both: between 19% and 73% starting below Algebra I, and between 42% and 87% finishing at or above Algebra II. Figure 11 shows the percentage of students taking their highest math course at a level of Algebra II or higher, and Figure 12 shows the percentage of students taking math higher than Algebra II. Evident in a comparison of these two figures is the drop in math course-taking above Algebra II regardless of tech prep-status, though a small percentage of tech prep participants and non-participants in all consortia took more advanced math courses, ranging from 10% to about 50% for both groups.

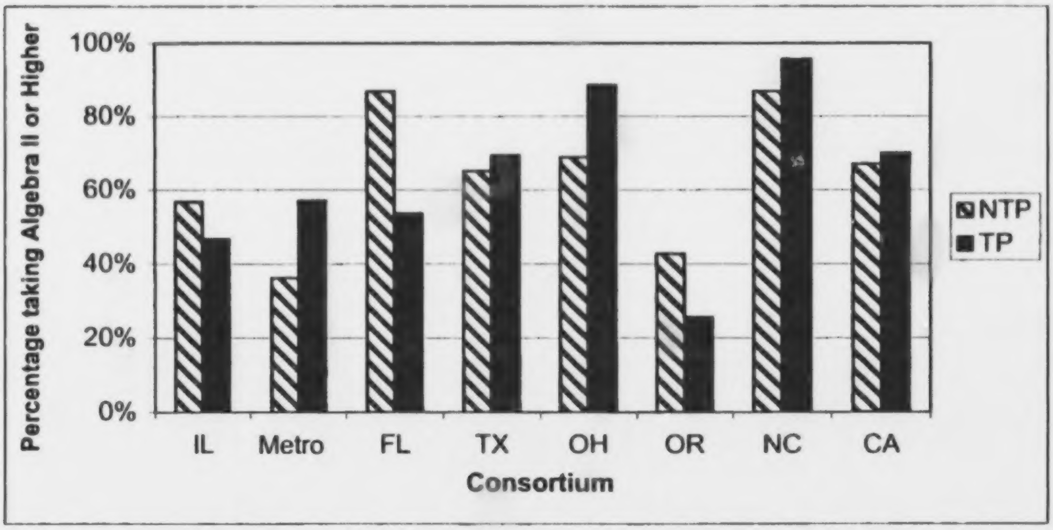

Figure 11. Percentage of tech prep participants and non-participants taking highest math course at level of regular Algebra II or above, by consortium.

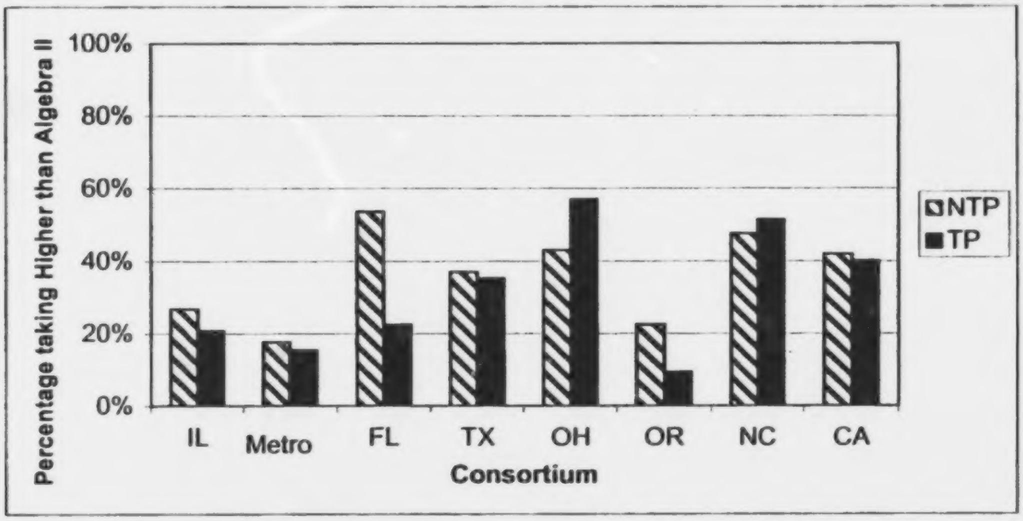

Figure 12. Percentage of tech prep participants and non-participants taking highest math at level higher than regular Algebra II, by consortium.

Progress (Highest to Lowest Math). In one consortium in particular, Miami Valley (OH), substantial advances were found in math course-taking for tech prep participants relative to the non-participant group. In this site, tech prep participants started at a lower level than their non-tech prep peers, but finished at a higher level—suggesting advantages to participating in tech prep in this consortium. Specifically, about 45% of the tech prep group started high school math at the basic math level (compared to 7% of the non-participant group), and over 55% finished math at the trigonometry or calculus level (compared to about 40% of the non-participant group). In contrast, in East-Central Illinois (IL), Hillsborough (FL), and Mt. Hood (OR), tech prep participants made less progress than non-participants.

12th-Grade Math. The proportion of students who took math in the 12th grade varied substantially from consortium to consortium, but most consortia showed the majority of students taking math in the 12th grade (see Figure 13). Considering all students, tech prep participants took an average of from 0.65 to 1.9 semesters of math in 12th grade, whereas non-participants took an average of from 0.8 to 1.5 semesters. For tech prep participants, the percentage taking some math in 12th grade ranged from 39% in Mt. Hood (OR) to 94% in Miami Valley (OH), and for non-participants it ranged from 49% in Mt. Hood (OR) to 77% in Hillsborough (FL).

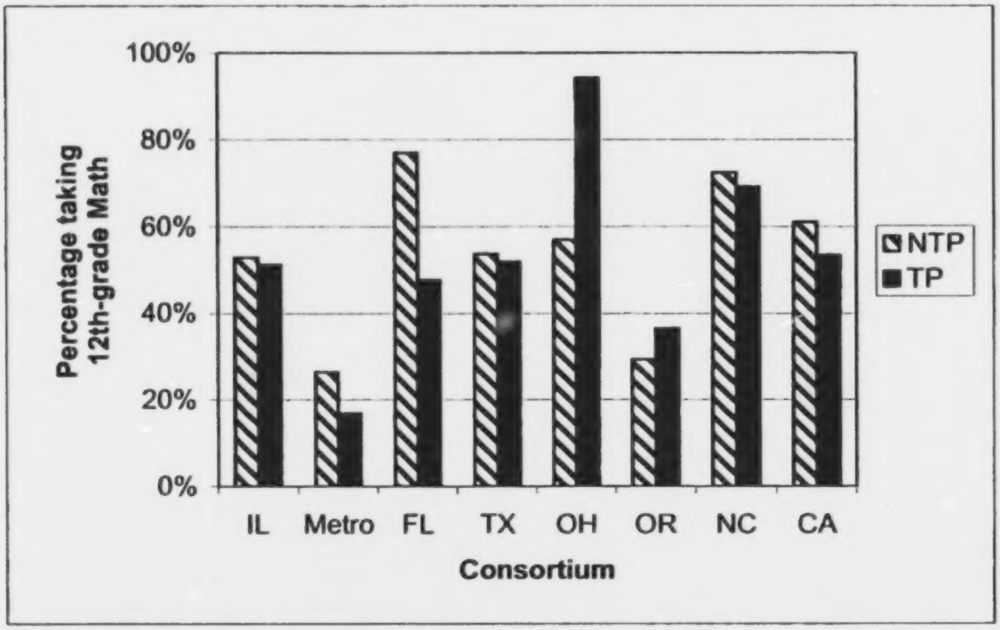

Figure 13. Percentage of tech prep participants and non-participants taking math in 12th grade, by consortium.

Differences were found between the tech prep participant and non-participant groups in three consortia. In Miami Valley (OH), tech prep participants were 1.65 times more likely to take math in the 12th grade than were non-participants. In contrast, in Hillsborough (FL) and Mt. Hood (OR), tech prep participants were 0.62 times and 0.8 times less likely than non-participants to take 12th-grade math, respectively. In the other five consortia, tech prep participants were equally as likely to take math in the 12th grade as their non-participant peers.

There was no significant difference from panel to panel in 12th grade math course-taking, except in East-Central Illinois (IL), Hillsborough (FL), and Golden Crescent (TX), where differences among panels were observed for tech prep participants only. Looking specifically at the tech prep panels, in East-Central Illinois (IL) and Hillsborough (FL), the later panels were more likely to take math in the 12th grade than were earlier panels. This result was reversed in Golden Crescent (TX), where the later panel was less likely to take 12th-grade math than were the earlier panels.

Science Performance and Course-Taking

This section presents results pertaining to science performance and course-taking for tech prep participant and non-participant groups and panels in the eight consortia. Considering the sizeable difference in science course-taking in the two high schools in the Metro consortium due to distinct curricula associated with each vocational high school, we treated these schools separately. Also, some science courses excluded from students' high school averages in one Metro school were included in our analysis because they took courses relevant to students' tech prep experience, resulting in a higher number of semesters of science than was reported by the school itself. (Appendix D contains tables on science performance and course-taking for all consortia.) Readers are also referred to Table 5 presenting science requirements as a way of enhancing understanding of the course-taking behaviors of the study groups.

Science Performance. The science GPA in the eight consortia ranged from 2.2 to 2.8 for tech prep participants and non-participants, equivalent to a grade of C to B-. On average, tech prep participants performed as well as their non-participant peers in all consortia except East-Central Illinois (IL) and Miami Valley (OH). In East-Central Illinois (IL), tech prep participants had lower grades than non-participants in science, whereas tech prep participants had higher grades than non-participants in Miami Valley (OH). In six consortia, there was no significant difference in science GPA from panel to panel, after controlling for tech-prep status. However, in one high school in Metro, the latest panel of tech prep participants performed better than the earliest panel, while the earliest panel of tech prep participants performed better than the latest panel in Guilford County (NC). No significant differences were observed among non-participant panels in these two consortia.

Total Semesters of Science. In most consortia, the average number of semesters of science taken was from 5 to 8, equivalent to 2.5 years to 4 years in science. The average number of semesters of science was even more varied in the two high schools in the Metro consortium, with one high school averaging 4 semesters, and the other the equivalent of nearly 14 semesters for tech prep participants, suggesting the equivalent of about 2 years to slightly under 7 years of high school science (see Figure 14). The average number of courses taken was 4.3 to 10.3 semesters for non-participants, equating to slightly above 2 years to about 5 years of science. In terms of overall amount of science taken, it seems likely that high school graduation requirements influence students' course-taking. Most students meet their school's requirement, with a small percentage exceeding it. So, if 3 years of science are required for graduation, students in either study group are more likely to take 3 years of math than are students in consortia requiring only 2. The notable exception is Miami Valley (OH), where virtually all students exceed the requirement of 1 year of science, with over 70% of tech prep participants taking seven semesters or more, and about 35% of non-participants taking this amount.

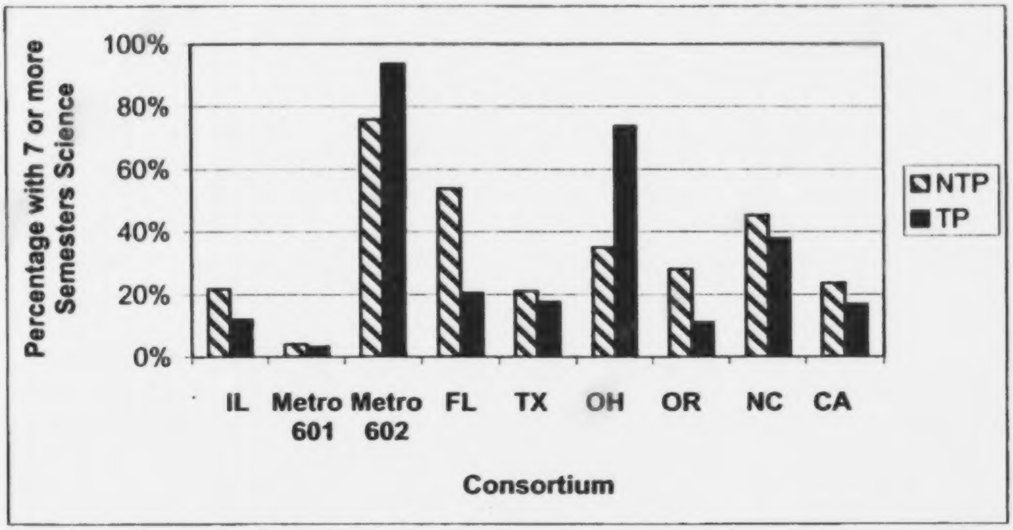

Figure 14. Percentage of tech prep participants and non-participants with seven or more semesters of science, by consortium.

In all consortia except Golden Crescent (TX), the total number of semesters of science differed significantly between tech prep participants and non-participants. In five consortia—East-Central Illinois (IL), Hillsborough (FL), Mt. Hood (OR), Guilford County (NC), and San Mateo (CA)—and one of the high schools in Metro, non-participants took more science than tech prep participants, and the difference ranged from 0.3 semesters—San Mateo (CA), Guilford County (NC), Metro 601—to 1 semester (Hillsborough (FL). However, in Miami Valley (OH) and Metro 602, tech prep participants took more science than non-participants; the difference was 1.3 semesters in Miami Valley (OH) and 3.5 semesters in Metro 602.

In East-Central Illinois (IL), Mt. Hood (OR), and Metro (both high schools), significant differences were found among tech prep participant panels in the semesters of science; however, the direction varied. In East-Central Illinois (IL), the '97 tech prep panel took about 0.4 semesters less science than earlier panels; in Mt. Hood (OR) and Metro, the '97 panel took more science than earlier panels. This result was not observed for non-participants, and no differences were found in the semesters of science taken among other panels in the remaining five consortia.

Levels of Science Course-Taking. In almost all consortia, Level 3 science courses, comprised of regular science courses such as biology, chemistry, and anatomy (except regular physics) account for most of the science courses taken by both study groups. In terms of semesters, the average number of semesters that students took of Level 3 science courses ranged from 2.5 semesters to 10.4 semesters for tech prep participants, and from 3.1 to 8.2 for non-participants. In all consortia except Guilford County (NC) and non-participants in Hillsborough (FL), Level 4 (regular physics) through Level 6 (AP physics) together accounted for a small proportion of the total semesters of science (see Figure 15). It ranged from 8.5% in Mt. Hood

(OR) to 37.7% in Guilford County (NC) for tech prep participants, and from 8.3% in Metro 601 to 43% in Guilford County (NC) for non-participants.

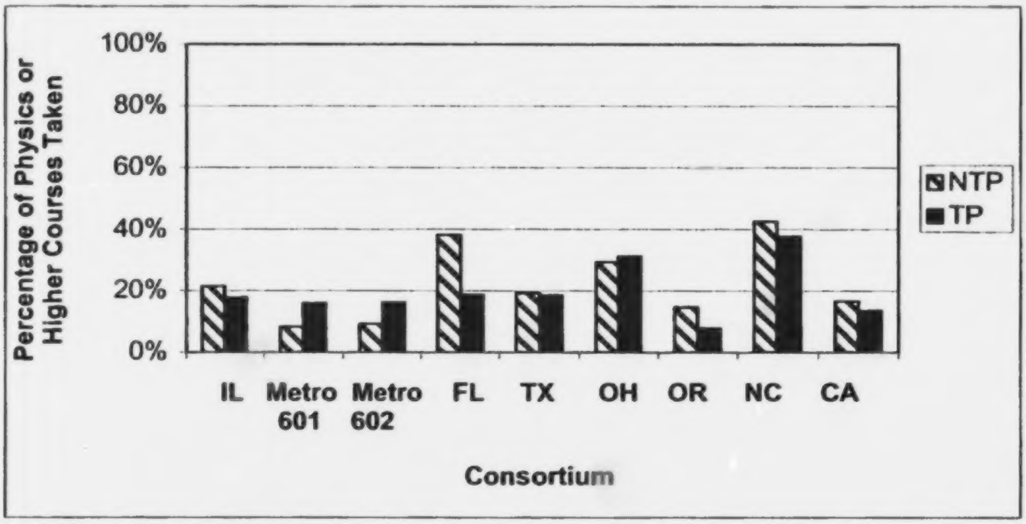

Figure 15. Percentage of physics or higher science courses taken by tech prep participants and non-participants, by consortium.

In all consortia except East-Central Illinois (IL) and San Mateo (CA), there was a significant difference in the overall pattern of science course-taking. In Miami Valley (OH) and Hillsborough (FL), a higher percentage of tech prep participants' science courses were lower level courses, and a lower percentage were higher level science courses than for non-participants. In Mt. Hood (OR) and Golden Crescent (TX), a significantly lower percentage of tech prep participants' science courses were Level 5 or Level 6 courses, respectively, than non-participants. In both Metro high schools, fewer Level 3 courses and more Level 4 courses comprised the science courses of tech prep participants than non-participants. In Guilford County (NC), fewer Level 1 courses and more Level 3 courses made up the science course-taking profile of tech prep participants than non-participants.

12th-Grade Science. The proportion of students taking science in the 12th grade ranged from 10.3% in Metro 601 to 84.6% in Miami Valley (OH) for tech prep participants and from 10.7% in Metro 601 to 61.1% in San Mateo (CA) for non-participants (see Figure 16). In five consortia—Miami Valley (OH), Hillsborough (FL), Mt. Hood (OR), Guilford County (NC), and San Mateo (CA)—and Metro 602, there was a difference between tech prep participants and non-participants in the likelihood of taking science in the 12th grade. In Miami Valley (OH) and Metro 602, tech prep participants were about twice as likely as non-participants to take 12th-grade science. Among those who took science in the 12th grade in Metro 602, tech prep participants took about 0.6 semesters more science than non-participants. Among those who took science in the 12th grade in East-Central Illinois (IL), Hillsborough (FL), and Guilford County (NC), non-participants took slightly more semesters of science in the 12th grade than tech prep participants.

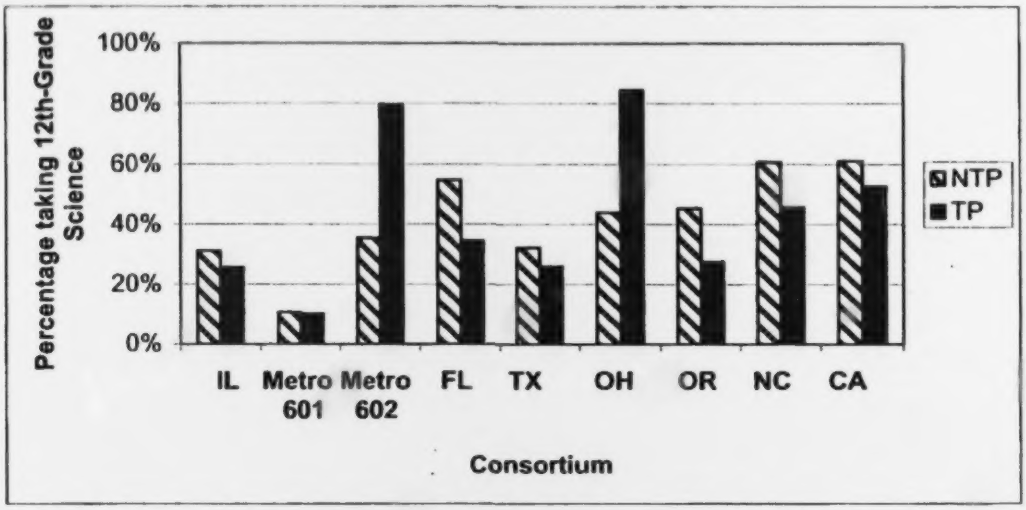

Figure 16. Percentage of tech prep participants and non-participants taking science in 12th grade, by consortium.

In five consortia—East-Central Illinois (IL), Golden Crescent (TX), Hillsborough (FL), Guilford County (NC), and San Mateo (CA)—no differences were found between the panels in either the likelihood of taking science in 12th grade or the number of semesters of science for tech prep participants and non-participants. In Miami Valley (OH), the later panel of tech prep participants took slightly less science in the 12th grade than the earlier panel. In Metro 601, the latest panel of tech prep participants took more science in 12th grade than the earlier panels, and in Metro 602 the latest panel of tech prep participants took 1.0 semester less of science than the earliest panel. These differences were not observed for non-participants. In Mt. Hood (OR), the '96 panel of non-participants was more likely to take 12th grade science than the other two, while no panel differences were found for tech prep participants.

Moreover, in Miami Valley (OH), Mt. Hood (OR), Metro, and Guilford County (NC), there were significant differences among panels in the overall pattern of science course-taking. In Miami Valley (OH), positive changes were observed for tech prep participants, in that the later panel had fewer Level 2 courses and more Level 3 and 4 courses than the earlier panel. In Mt. Hood (OR), positive changes were found for tech prep participants as well, with the latest panel taking fewer Level 2 courses than the '95 or '96 panels. In Metro 602, the latest panel of tech prep participants had a higher percentage of Level 2, Level 4, and Level 5 courses, and a lower percentage of Level 3 courses than the earlier panels.

Changes were also evident for non-participants in the two Metro schools, Golden Crescent (TX), Miami Valley (OH), and Mt. Hood (OR). Positive change was evident in several of these sites, in that later panels were taking more advanced science than earlier panels. For example, in Miami Valley (OH), the later panel of non-participants had a lower percentage of Level 3 courses, but a higher percentage of Level 5 courses. In Mt. Hood (OR), the '97 panel of non-participants had a lower percentage of Level 2 courses but higher percentage of Level 3 courses than the '95 or '96 panels. In the remaining consortia, shifts were taking place in the types of science courses taken by panel, but the changes were not necessarily linked to meaningful changes in the level of course-taking. For example, the panels in Guilford County (NC) differed in the proportion of Levels 5 and 6 honors courses being taken, while about the same proportion of students in each panel took Level 3 courses or below. The result is statistically significant, but it does not seem to reflect an advancement in the level of science course-taking among most Guilford County (NC) students.

English Performance and Course-Taking

This section presents results pertaining to English performance and course-taking for tech prep participants and non-participants, and panels associated with these participant groups in the eight consortia. Appendix E contains English performance and course-taking results by consortium. Table 5 presents English requirements, to provide a basis for interpreting results on English performance and course-taking.

English Performance. Tech prep participants performed as well as their non-participant peers in all consortia except East-Central Illinois (IL). In this consortium, non-participants performed better than tech prep participants, with the cumulative GPA averaging 2.56 for non-participants, compared to 2.36 for tech prep participants. There was no significant difference in English GPA among panels for tech prep participants and non-participants in the consortia, excluding East-Central Illinois (IL) and Metro. In Metro, the '97 panel performed better than the earlier panels for both the tech prep participants and non-participants. Whereas there was no significant association between English GPA and panel in East-Central Illinois (IL) for the tech prep group, an association was found between GPA and non-participant panel, with the '97 panel having higher performance than the '96 one.

Total Semesters of English. The most common pattern of English course-taking was 7 or 8 semesters during high school, both for tech prep participants and non-participants. This finding is not surprising, given the fact that most consortia require 4 years of English to graduate from high school. Still, there was slight variation among the percentage of students taking at least 7 or 8 semesters, ranging from 82.5% to 100% for tech prep participants, and from 75% to 98.4% for non-participants. In four consortia—Hillsborough (FL), Metro, Guilford County (NC), and San Mateo (CA)—the percentage reached 97% or higher for both student groups.

The mean total number of semesters of English ranged from 7.7 to 9.0 for tech prep participants, and from 7.9 to 8.9 for non-participants, suggesting slightly under 4 years to about 4.5 years of English. On average, tech prep participants took about the same number of semesters of English as non-participants in all consortia, except East-Central Illinois (IL) and Guilford County (NC). In these two consortia, tech prep participants took slightly fewer semesters (about 0.3 semesters) of English than non-participants.

The total semesters of English did not differ for the panels of tech prep participants and non-participants in five consortia, but differences among panels were observed in Golden Crescent (TX), Hillsborough (FL), and Metro for tech prep participants only. In Golden Crescent (TX), the later two panels took about 0.6 semesters more English than the earliest panel. In Hillsborough (FL), the '96 panel took about 0.8 semesters more English than the '95 panel. In Metro, the '95 panel took about 0.5 semesters more English than the '96 panel.

Level of English Course-Taking. Examining the overall pattern of English course-taking, the mean percentage of each English course level (basic, regular, college prep, AP, and Honors) was calculated. The mean percentage of each category was compared for tech prep participants and non-participants, and also among panels within the same tech-prep status group. In all consortia, most tech prep participants and non-participants took mostly regular English courses, but results differed for Guilford County (NC) and San Mateo (CA). In these two consortia, a substantial number of students in both groups took English courses designated as college preparatory. Thus, there was the fourth category designed as college prep for these two consortia. College prep English was also evident in the East-Central Illinois (IL) consortium, but these courses accounted for a small proportion of the total semesters for either group, so the category was not added. In Guilford County (NC) and San Mateo (CA), college prep English was the most common among all types of English courses, although this type of course-taking did not account for as high a proportion of English courses as did regular English in the other consortia.

In all consortia except San Mateo (CA), there was a significant difference between tech prep participants and non-participants in the overall pattern of English course-taking. In Golden Crescent (TX), Metro, and Guilford County (NC), tech prep participants took fewer basic English courses than non-participants. In Hillsborough (FL), tech prep participants took the equivalent of 0.4 more semesters of basic English than non-participants. In Miami Valley (OH), Hillsborough (FL), and Mt. Hood (OR), tech prep participants took less AP and honors English than non-participants. In East-Central Illinois (IL), Miami Valley (OH), and Hillsborough (FL), tech prep participants took more regular English than non-participants. In Guilford County (NC), tech prep participants took more college prep English than their non-participant peers.

The proportion of students taking any basic English varied from consortium to consortium, ranging from only 1% for tech prep participants and 7% for non-participants in Guilford County (NC), to 30% for tech prep participants and 33% for non-participants in San Mateo (CA; see Figure 17). In half of the consortia—East-Central Illinois (IL), Miami Valley (OH), Mt. Hood (OR), and San Mateo (CA)—tech prep participants and non-participants were equally likely to take some basic English, but in three consortia—Golden Crescent (TX), Metro, and Guilford County (NC)—non-participants were more likely to take basic English than tech prep participants (see Figure 17). Specifically, non-participants were about twice as likely to take basic English as tech prep participants in Golden Crescent (TX), about four times more likely in Metro, and six times more likely in Guilford County (NC), indicating that more of these students were starting English course-taking in high school at a basic level than the tech prep participant group. An exception to this pattern was found in Hillsborough (FL), where tech prep participants were about twice as likely to start high school taking basic English as were non-participants.

In five consortia—Golden Crescent (TX), Miami Valley (OH), East-Central Illinois (IL), Hillsborough (FL), and Metro—the proportion of students taking basic English differed significantly among panels. In East-Central Illinois (IL), Golden Crescent (TX), and Miami

Valley (OH), differences were observed for tech prep participants wherein the later panel was less likely to take basic English than the earlier panels. In Hillsborough (FL) and Metro, differences were observed for non-participants only. In Hillsborough (FL), fewer non-participants in the '97 panel took basic English than in earlier panels. In Metro, this finding was reversed, in that more non-participants in the '96 and '97 panels took basic English than in the '95 panel.

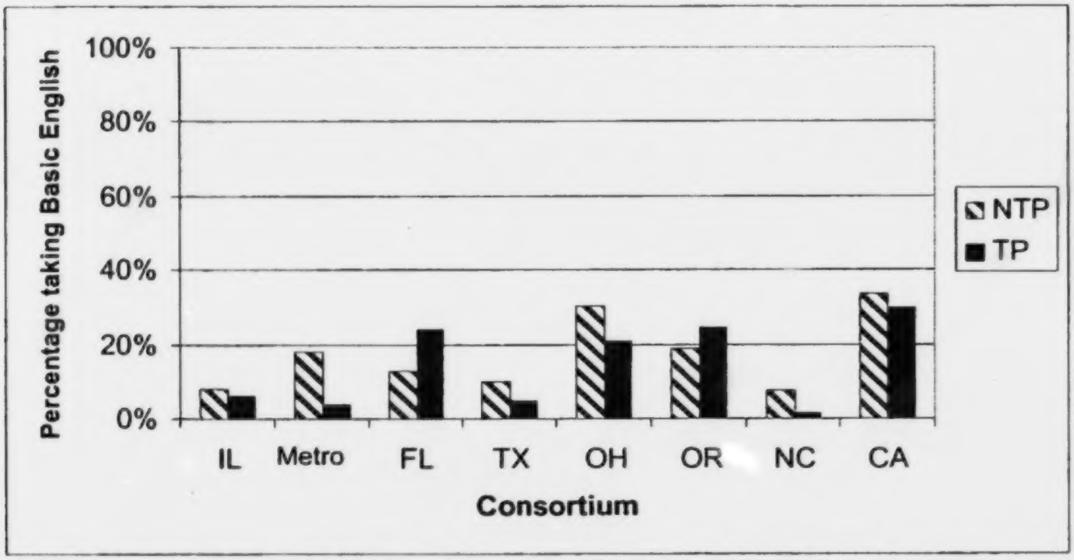

Figure 17. Percentage of tech prep participants and non-participants taking any basic English, by consortium.

The proportion of students taking AP and honors English ranged from 5% in Mt. Hood (OR) to 54% in Guilford County (NC) for tech prep participants, and 17.8% for non-participants in Mt. Hood (OR) to 60.8% in Hillsborough (FL) for non-participants (see Figure 18). In half of the consortia—Golden Crescent (TX), Metro, Guilford County (NC), and San Mateo (CA)—tech prep participants and non-participants were equally likely to take AP and honors English, but in the other four consortia, non-participants were more likely to be taking AP and honors classes. Specifically, non-participants in these consortia were from about 1.5 times to 3 times—East-Central Illinois (IL) and Mt. Hood (OR), respectively—more likely to take AP and honors English than tech prep participants.

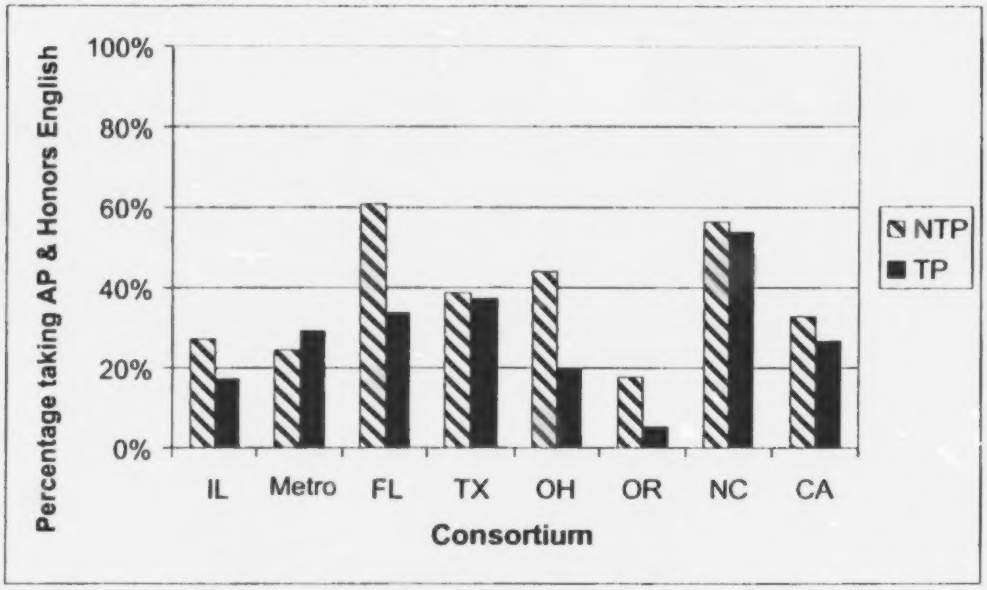

Figure 18. Percentage of tech prep participants and non-participants taking any AP and Honors English, by consortium.

Further, in four consortia—East-Central Illinois (IL), Miami Valley (OH), Metro, and San Mateo (CA)—the likelihood of taking AP and honors English differed among the panels, but no significant associations were observed by tech prep-status in the other four sites. In East-Central Illinois (IL), Miami Valley (OH), and San Mateo (CA), the associations were found for non-participants only, but the direction varied. In East-Central Illinois (IL), the '97 panel of non-participants was more likely to take AP and honors English than the '96 panel, whereas the '97 panel in Miami Valley (OH) and the '96 and '97 panels in San Mateo (CA) were less likely to take AP and honors English. In Metro, the '97 panel was more likely to take AP and honors English than the earlier panels, for both tech prep participants and non-participants.

12th-Grade English. More than 90% of both tech prep participants and non-participants took English in the 12th grade in all consortia, except the non-participant group in Miami Valley (OH), where only 71% took 12th-grade English. There was no significant difference between tech prep participants and non-participants in the likelihood of taking English in the 12th grade and in the number of semesters of 12th-grade English in any consortia except Miami Valley (OH). In this consortium, tech prep participants were more likely than non-participants to take 12th-grade English, and this group took slightly more English than non-participants. In San Mateo (CA), non-participants took more 12th-grade English than the tech prep participant group. Lastly, the proportion of students taking English in the 12th grade did not differ significantly among panels for tech prep participants and non-participants in any consortium.

English-as-a-Second-Language (ESL). Four consortia—Metro, Hillsborough (FL), Guilford County (NC), and San Mateo (CA)—provided sufficient detail on student transcripts and records to identify ESL status. Of all students, those participating in ESL courses or identified as ESL by their schools were as follows: 8.8% in Metro, 10% in Hillsborough (FL), 2% in Guilford County (NC), and 12.3% in San Mateo (CA). Though these students were incorporated into the previous English course-taking, we conducted a separate analysis of these students, including tech prep status, to identify any significant differences between the two groups. Among these students, the only difference between tech prep participants and non-participants was that, in Guilford County (NC), tech prep participants had a significantly lower percentage of basic English and higher percentage of college prep English than the non-participant group, though it is important to note that these results pertain to a very small sample. Other than that, the two groups did not have major differences. However, based on descriptive results, we can see that ESL students tended to have a higher proportion of basic English and lower proportion of college prep, AP, and honors English compared to the students affiliated with either of the overall tech prep participant or non-participant groups.

Career-Technical Education (CTE) Course-Taking

This section presents results pertaining to CTE course-taking utilizing definitions of vocational concentrator and vocational specializer provided by NCES (see, for example, Houser, 1995; Levesque et al., 2000). The NCES classifies a student who takes three Carnegie credits or more of CTE courses in a single occupational area as a vocational concentrator. A *vocational specializer* takes four credits or more of CTE courses in a single occupational area. The classification of CTE courses for this study is based on the Secondary School Taxonomy (SST; see Gifford, Hoachlander, & Tuma, 1989), which is commonly used to categorize high school course-taking in large transcript studies such as this one. Appendixes F and G present findings, based on analysis of high school transcripts, for the two study groups by consortium. Results are not computed for panels within these groups because of small cell sizes.

Vocational Concentrators and Specializers

Overall, tech prep participants were more likely to be vocational concentrators and vocational specializers than non-participants, as evidenced by 61% of all tech prep participants and 36% of non-participants being classified as vocational concentrators, and 33% of tech prep participants and 17% of non-participants being vocational specializers. In the Miami Valley (OH), Hillsborough (FL), Mt. Hood (OR), and Guilford County (NC) consortia, more than 70% of tech prep participants were vocational concentrators. In Miami Valley (OH), nearly all of the tech prep participants were vocational concentrators and 95% were vocational specializers. In other consortia, the proportion of participants who were vocational concentrators exceeded the proportion who were specializers by a substantial margin: 33% in East-Central Illinois (IL), 42% in Hillsborough (FL), 39% in Golden Crescent (TX), 29% in Mt. Hood (OR), and 37% in Guilford County (NC). The difference between the percentage of vocational concentrators and specializers was lower in Miami Valley (OH) and Metro, both sites with strong CTE curriculum, and in San Mateo (CA), where few students were classified as either concentrators or specializers.

Looking specifically at vocational concentrators by consortium, in five consortia, tech prep participants were more likely to be vocational concentrators than non-participants. In Metro, this pattern was reversed, with non-participants more likely to be vocational concentrators than were tech prep participants. This result is undoubtedly attributable to the fact that both schools involved in the study are vocational high schools, where all students are expected to take substantial amounts of CTE courses. In East-Central Illinois (IL) and Golden Crescent (TX), another pattern emerged. In both, slightly more tech prep participants than non-participants were classified as vocational concentrators, but the result failed to reach statistical significance at the .05 level.

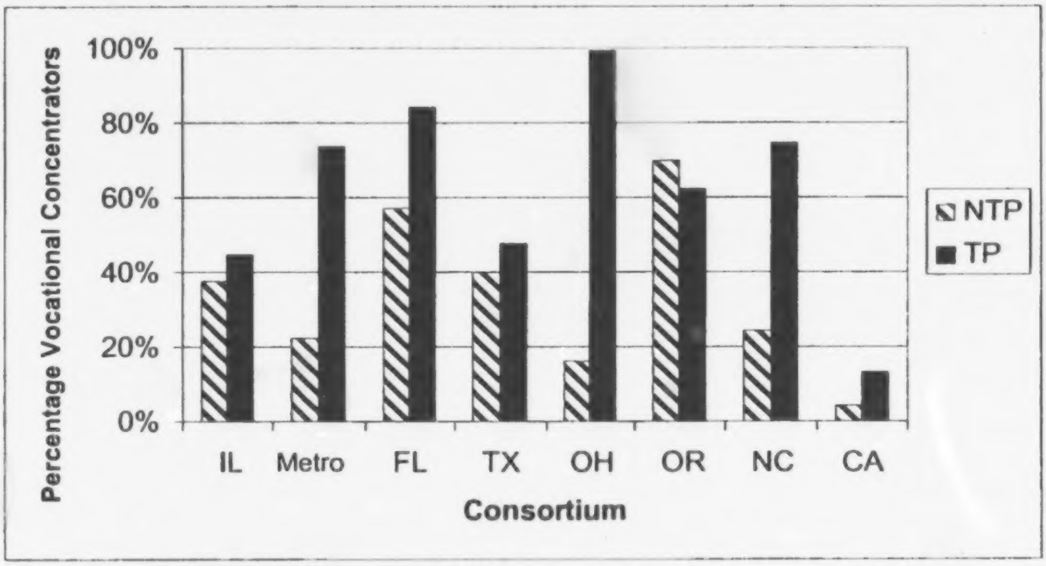

Figure 19. Percentage of tech prep participants and non-participants who are vocational concentrators, by consortium.

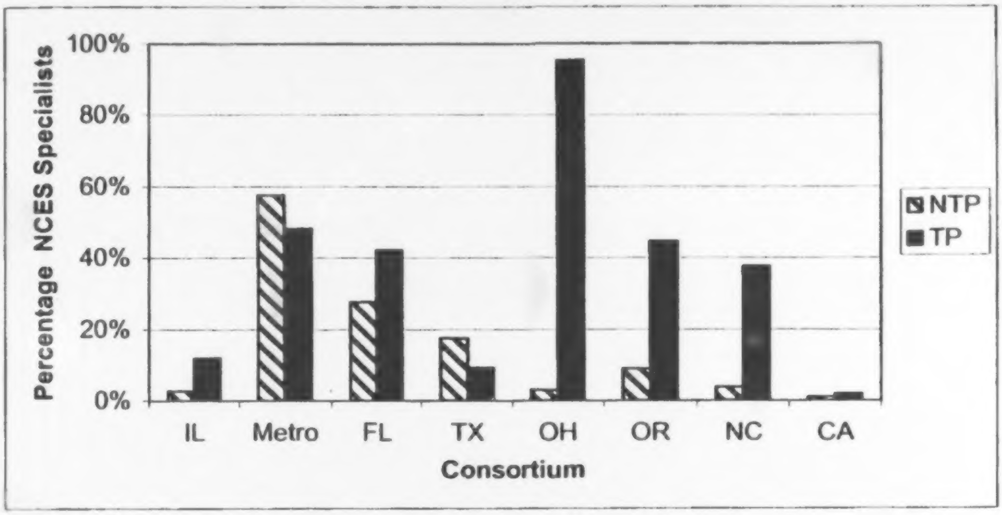

Figure 20. Percentage of tech prep participants and non-participants who are vocational specializers, by consortium.

The career areas taken by vocational concentrators and vocational specializers are reflective of the particular occupational fields associated with tech prep programs within the schools in each consortium. In some cases, tech prep participants and non-participants engaged in particular career fields in similar ways; however, in some cases, tech prep participants were far more likely to either concentrate or specialize in a career field than the non-participant group. In only a few cases were non-participants more likely to concentrate or specialize in a career area more than tech prep participants were. A few examples illustrate these patterns. First, the proportion of tech prep participants in the Metro and Miami Valley (OH) consortia far exceed the proportion of non-participants in technical communications (e.g., computer technologies, electronic technology, industrial production technology). There are many other examples that follow this pattern, but these stand out both because of the high proportion of tech prep participants relative to non-participants and also because of the emphasis of the career area on computers and electronic technologies that have been closely associated with tech prep programs nationally (Hershey et al., 1998).

Second, the proportion of vocational concentrators in business and agriculture in East-Central Illinois (IL) was roughly equivalent for both groups. Though this example of CTE course-taking is less prevalent, there are numerous examples across the eight consortia of CTE concentration that is similar for the two study groups. Finally, the proportion of non-participants who were vocational concentrators or specializers in precision production (e.g., electronics, welding) in Metro and in health in Hillsborough (FL) exceeded the proportion of tech prep participants. Representing the least common pattern but evident in some consortia, there are incidences where CTE course-taking is more highly associated with the non-participant group than the tech prep. There are several possible reasons for this, including the possibility that some CTE programs are not incorporated into the consortium's overall tech prep initiative, or that a substantial proportion of students who enroll in these courses are not fulfilling other tech prep core curriculum (including academic) requirements. Consequently, these students are not considered "tech prep students" and are not flagged as tech prep participants in the local consortium. (Refer to Appendix Tables F2 and F3 for a detailed description of the specific occupational areas, according to SST coding, taken by the two study groups.)

College Prep Participation

Transcript analysis was conducted to identify students in the tech prep participant and non-participant groups who met a modified version of the NCES definition of college prep, which is based on academic course-taking (see, for example, Levesque et al., 2000). Specifically, the NCES definition of college prep is four Carnegie units English, three units math, with at least one unit in algebra I or higher; two units science with at least one unit in biology, chemistry, or physics; two units social science, at least one of which is American history or government; and two units of a single foreign language. Though this full definition was not used, an explanation of the modified version of the NCES college prep definition is given below, including why and how a modified version of the variable was created and applied in this study.

Initially, the college prep variable was not included for the CC&B dataset because our plan focused on academic course-taking in core curriculum for tech prep (math, English, science, and career-technical education) as specified in the federal legislation. However, as the study proceeded and more attention was devoted to blending tech prep with college prep curriculum, it became important to measure this concept. Unfortunately, we had not initially coded and entered social science or foreign language courses into the CC&B dataset, so we had to create an efficient process for entering these data. This process was achieved by testing three versions of the college prep variable in two sites—East-Central Illinois (IL) and Golden Crescent (TX)—and choosing one of the versions for the remaining six. The three versions tested were the full NCES definition (specified above), a second version that includes NCES specifications for math, English, and science, and adds social science courses but not foreign language. A third version uses NCES specs for math, English, and science, and adds foreign language courses rather than social science. By correlating the full NCES college prep variable with the second version, including social science, we obtained a correlation coefficient of only .67, which was unacceptable. We then correlated the full NCES college prep definition with version three, including foreign language but not social science courses, and this version yielded an exceedingly high correlation coefficient of .99. Based on these results, we proceeded to code foreign language courses for all students in the remaining six sites, which allowed us to construct a modified version of the NCES college prep variable that provided an acceptable level of accuracy for this analysis. (Results, including a cross-tabulation of college prep with the vocational concentrator and vocational specializer classifications, are shown in Appendix G.)

Results indicate the majority of tech prep participants and non-participants were not taking a college prep curriculum, though there were some exceptions. Over 70% of the non-participant group in Hillsborough (FL) met the modified-NCES definition of college prep, and 52% of the tech prep participant group in Golden Crescent (TX) was enrolled in college prep curriculum. Otherwise, college prep participation by either of the two study groups ranged from only 7% for the tech prep participants in East-Central Illinois (IL) to 46% for the non-participants in Golden Crescent (TX).

Differences between the tech prep participant and non-participant groups were evident in college prep participation in five consortia—East-Central Illinois (IL), Metro, Hillsborough (FL), Mt. Hood (OR), and Guilford County (NC). In four consortia, more non-participants engaged in college prep than participants. For example, in East-Central Illinois (IL), only 7% of tech prep participants were enrolled in college prep curriculum, compared to 21% of the non-participant group, and in Mt. Hood (OR), 12% of tech prep participants were engaged in college prep, compared to 25% of non-participants. In contrast, in Metro, a higher percentage of tech prep participants were enrolled in college prep, and the difference between participant and non-participant groups was significant.

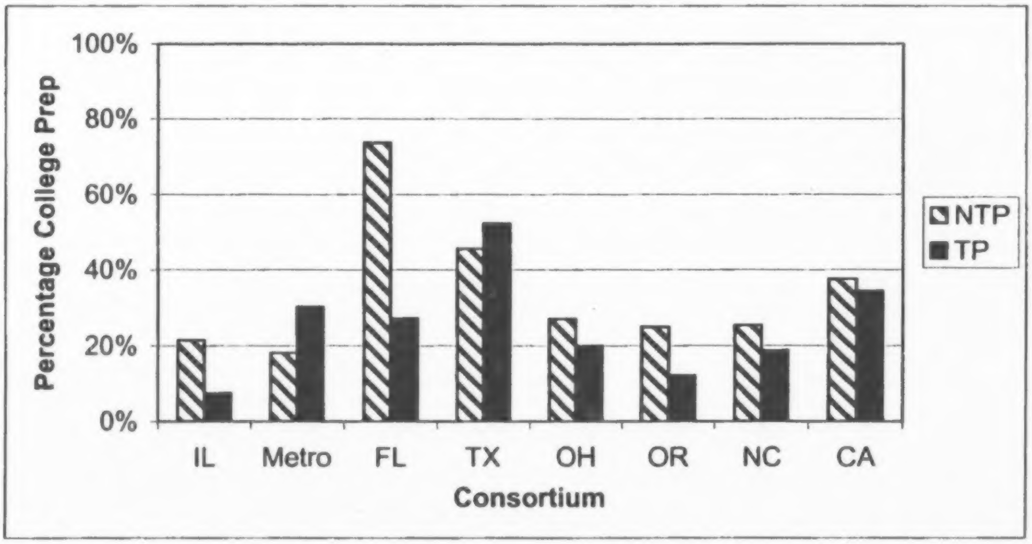

Figure 21. Percentage of tech prep participants and non-participants who are college prep, by consortium.

Vocational Concentration, Specialization, and College Prep

Our analysis involved a cross-tabulation of the vocational concentrator, vocational specializer, and college prep variables, including significance testing for association among these variables for the tech prep participants and non-participants. For each study group, we examined the association between college prep and vocational concentration and specialization. Significant results were evident for most sites, but the East-Central Illinois (IL) consortium showed no association between college prep and vocational concentration and specialization for the two study groups, indicating that among both participants and non-participants, concentrators and specializers were no more or less likely to take a college prep program than were those students who took less concentrated vocational courses. In Miami Valley (OH) and Guilford County (NC), there was no association among the college prep and vocational variables for tech prep participants, but there was an association for the non-participant group. In both cases, non-participants who also enrolled in college prep were less likely to be classified as vocational concentrators than were those who did not fulfill college prep requirements.

The five remaining sites showed association between college prep and vocational concentration or specialization, but the pattern of results varied. In Metro, we observed a greater likelihood of vocational concentration or specialization when students (either group) were not also identified as college prep. This result was evident in Hillsborough (FL) for vocational specializer but not vocational concentrator, and no significant association between college prep and vocational concentration or specialization was evident in the non-participant group. In Golden Crescent (TX) and Mt. Hood (OR), concentrators and specializers were less likely to fulfill college prep requirements than were students who took less concentrated vocational course work, and this was true regardless of tech prep participation. Results paralleling these were evident in the San Mateo (CA) consortium for both study groups, in that the non-college prep groups were more likely to be considered vocational concentrators than the college-prep. (Almost no students fit the vocational specializer definition in this consortium, making significance testing implausible.)

Finally, yet another pattern emerged in the Mt. Hood (OR) consortium. In this site, the majority of tech prep participants were vocational concentrators regardless of whether they fit the college prep definition or not, though a higher percentage of the non-college prep were vocational concentrators. Only 20% of the tech prep/college prep group was considered vocational specializers, as compared to nearly half of the non-tech prep group. Overall, results seem to suggest involvement in tech prep has a dampening effect on vocational concentration or specialization, though we found some exceptions to this pattern deserving of further analysis in future studies.

Articulated Course-Taking

This section presents findings comparing articulated course-taking for tech prep participants and non-participants enrolled at the secondary level, based on a transcript analysis and document review that compared courses having formal articulation agreements with transcript records that students had taken and successfully completed the courses. Results are provided for five consortia—East-Central Illinois (IL), Golden Crescent (TX), Hillsborough (FL), Mt. Hood (OR), and San Mateo (CA)—that had detailed enough transcript records to determine articulated course-taking. For all five consortia, tech prep participant and non-participant groups are included in this analysis, along with panels within these two groups. (Supporting tables appear in Appendix H.)

Overall, the proportion of tech prep participants taking articulated courses ranged from 62% in Mt. Hood (OR) to 91% in San Mateo (CA) for tech prep participants, and from 31% in Mt. Hood (OR) to 76% in East-Central Illinois (IL) for non-participants (see Figure 22). In the five consortia, tech prep participants were more likely to take articulated courses than non-participants, except in East-Central Illinois (IL). In this consortium, more than three quartiles of tech prep participants and non-participants took articulated courses.

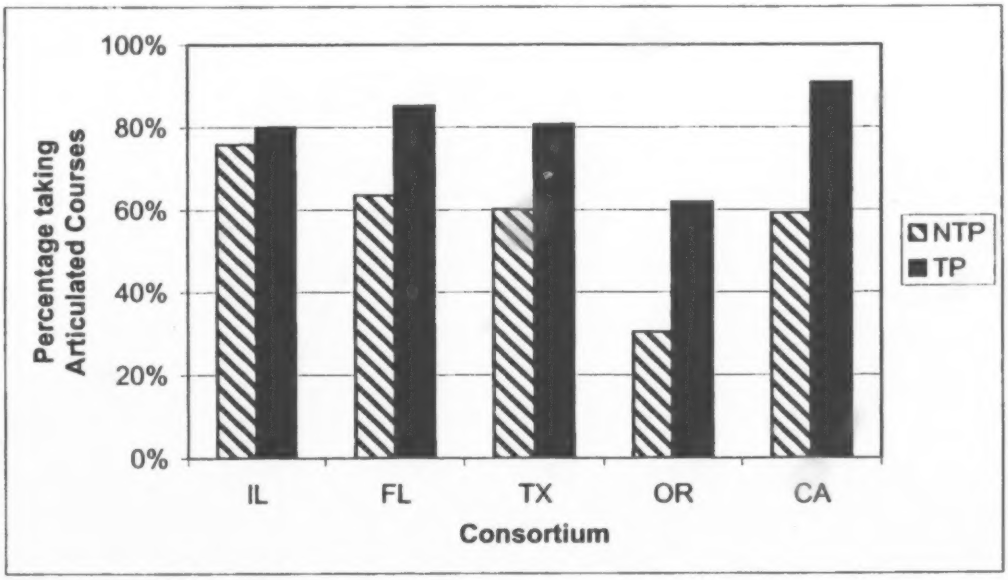

Figure 22. Percentage of tech prep participants and non-participants taking articulated courses, by consortium.

Among students who took some articulated courses, tech prep participants took significantly more semesters than non-participants in all five consortia, with the difference between tech prep participants and non-participants ranging from 0.7 to 2.1 semesters, on average (see Figure 23). Among students who took some articulated courses, the average number of semesters ranged from 3.3 in Mt. Hood (OR) to 6.5 in Hillsborough (FL) for tech prep participants, and 2.1 in Mt. Hood (OR) to 4.9 in Hillsborough (FL) for non-participants.

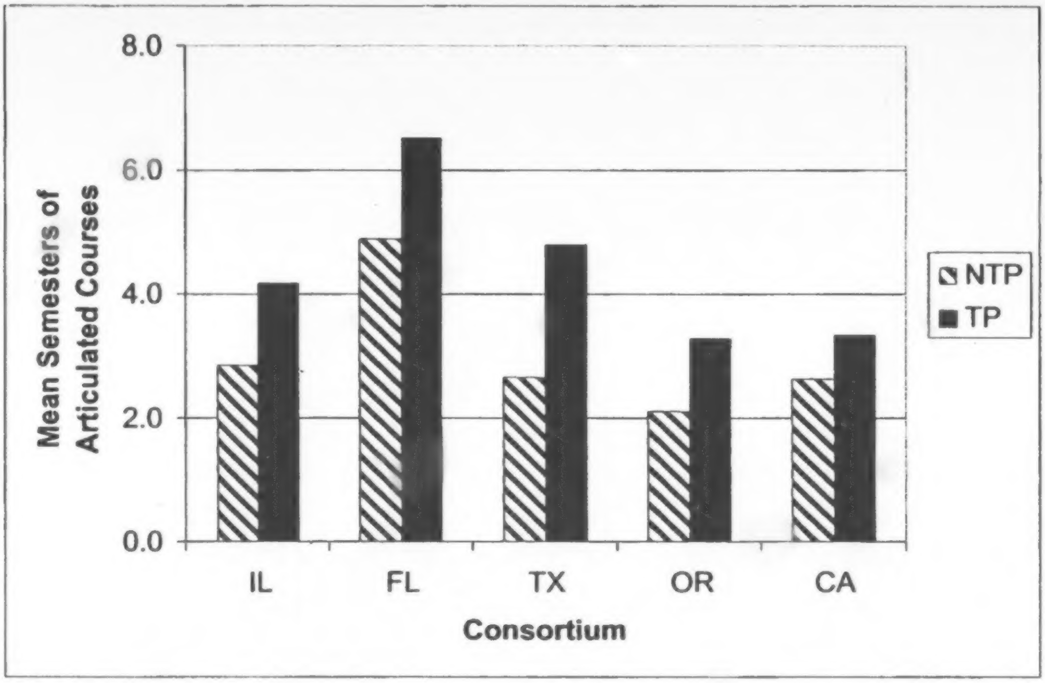

Figure 23. Mean semesters of articulated courses taken by tech prep participants and non-participants, by consortium.

In terms of the focus of the articulated course-taking, nearly all of the courses were identified in the career fields, either because these courses were more likely to be articulated than academic (e.g., math, science) ones or because the information was more likely to appear on the high school transcripts. Limited information about articulated course-taking on college transcripts precluded us from knowing more about articulated course-taking across levels, which would have contributed to a fuller understanding of this phenomenon. Even so, we were able to determine from high school transcripts in the five sites that the most prevalent career areas represented among the articulated CTE courses were business, mechanics/repair, and precision production. The most popular career area for articulated CTE courses was business in four—East-Central Illinois (IL), Golden Crescent (TX), Hillsborough (FL), and San Mateo (CA)—of the five sites, and this was true for both the tech prep participants and non-participants. In Mt. Hood (OR), articulated CTE courses were prevalent in precision production for tech prep participants, and in consumer and family studies for non-participants.

In Golden Crescent (TX) and Hillsborough (FL), tech prep participants and non-participants were more likely to take articulated CTE courses in the later panel than in earlier ones (see Figure 24). However, this trend was reversed in Mt. Hood (OR). There, the later panel of participants was not only less likely to take articulated CTE courses, they also took fewer semesters than the earlier panels. No differences were found among panels in other consortia with respect to articulated CTE course-taking.

Finally, as was mentioned previously, articulated course-taking in academic subjects (e.g., math, science) was not prevalent. However, results showed that students in two consortia—Mt. Hood (OR) and San Mateo (CA)—had some level of involvement. Though enrollment among students in Mt. Hood (OR) was minimal, students in San Mateo (CA) demonstrated a higher level of involvement. In this consortium, 12.6% of tech prep participants and 19.9% of non-participants took articulated courses in math and/or science, with greater participation by non-participants showing significance. No consistent patterns were observed for differences among panels for either the tech prep participant or non-participant group.

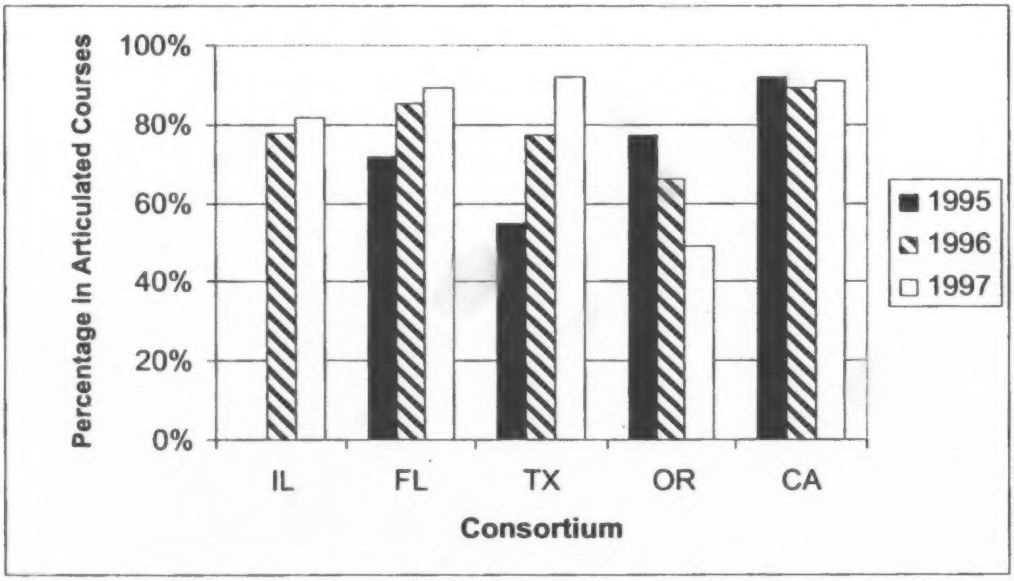

Figure 24. Percentage of tech prep participants taking articulated courses, by panel and consortium.

Work-Based Learning in High School

Data used in this analysis was drawn from the 1998 *Education-To-Careers Follow-Up Survey*. The findings revealed the incidence with which respondents indicated they had participated in particular work-based learning (WBL) activities such as job shadowing, co-op, youth apprenticeships, community service/service learning, and so forth. Also included in this section of the follow-up survey was a question about whether respondents had participated in tech prep, providing an indication of the extent to which these students self-identified with tech prep program participation. Statistical results associated with this section of the report can be found in tables in Appendix I.

Participation Status. In all consortia except San Mateo (CA), the majority of students participated in at least one form of WBL (see Figure 25). In San Mateo (CA), slightly less than half (48.5%) of the students participated in WBL. In four consortia—East-Central Illinois (IL), Miami Valley (OH), Hillsborough (FL), and Guilford County (NC)—tech prep participants were more likely to participate in WBL than non-participants. Specifically, tech prep participants were 1.26 in East Central Illinois (IL), 1.45 in Miami Valley (OH), 1.16 in Hillsborough (FL), and 1.50 in Guilford County (NC) times more likely than non-participants to engage in WBL in these sites.

There was no significant difference in the proportion of students participating in WBL by panel after controlling for the tech-prep status in Miami Valley (OH), Golden Crescent (TX), Hillsborough (FL), Metro, and San Mateo (CA). However, for tech prep participants in East-Central Illinois (IL) and Guilford County (NC), the later panel was more likely to participate than the earlier ones. In Mt. Hood (OR), the '96 panel of tech prep participants was less likely to participate than the '95 or '97 panels. In the East-Central Illinois (IL) site, the '97 panel was more likely to participate than the '96 panel, and this finding may reflect the high priority of WBL in the schools in this consortium, in that all 9th-grade students (tech prep and otherwise) were encouraged to participate in job shadowing experiences (Bragg & Reger, 2002). (Results suggest job shadowing was occurring among about one third of each study group.)

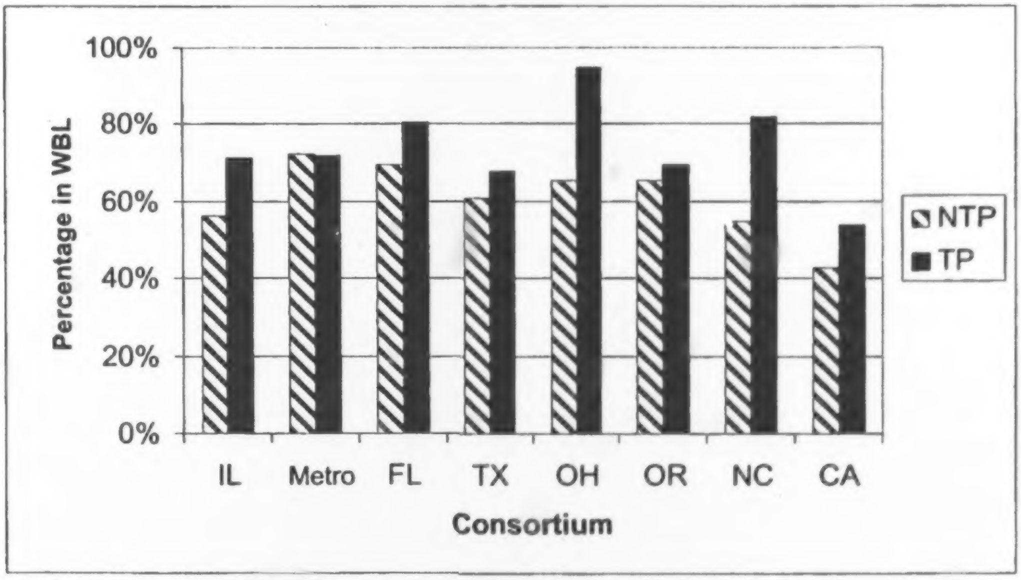

Figure 25. Percentage of tech prep participants and non-participants engaged in work-based learning, by consortium.

Types of WBL Experiences. In almost every consortium, students participated in only a few types of WBL. The chi-square test of the difference between tech prep participant and non-participant groups on WBL participation rate was performed only for those categories with a sufficient number of respondents reporting participation. The analysis excluded students who reported non-participation in any kind of WBL during high school. Given these caveats, results showed that co-op, job shadowing, and community service and service learning were among the most prevalent forms of WBL.

In two consortia, Guilford County (NC) and Hillsborough (FL), we found an association between a particular form of WBL participation and panel. In Guilford County (NC), a similar phenomenon may be taking place as was seen in East-Central Illinois (IL) with respect to encouraging job shadowing among the general student population, in that only about 6% of the '96 non-participant panel took part in job shadowing, compared to 32% of the '97 panel and 47% of the '98 panels. (Recall that both of these consortia place a high priority on WBL, with youth apprenticeships emphasized, as is evidenced in these results, as well as the other case study findings.) In Hillsborough (FL), however, an entirely different pattern was occurring. In this site, participation in internships declined among non-participants, from 60% of the '95 panel to 11.1% of the '96 and 11.5% of the '97 panel. The exact nature of changes or the reasons behind them is not evident from our data collection efforts.

Other findings emerged that deserve discussion. First, compared to non-participants, a significantly lower percentage of tech prep participants reported having engaged in community service and service learning than non-participants in all consortia except Metro and San Mateo (CA; see Figure 26). In East-Central Illinois (IL) and Guilford County (NC), a significantly higher proportion of tech prep participants reported having engaged in youth apprenticeships than non-participants, which confirms that these tech prep participants recognized their involvement in this form of WBL. In Miami Valley (OH), a significantly lower percentage of tech prep participants reported having participated in school-sponsored enterprises or businesses than non-participants. In Hillsborough (FL), a significantly lower percentage of tech-prep students participated in job shadowing and internships than non-participants. Finally, in Guilford County (NC), a higher percentage of tech-prep students participated in internship and co-op than non-participants.

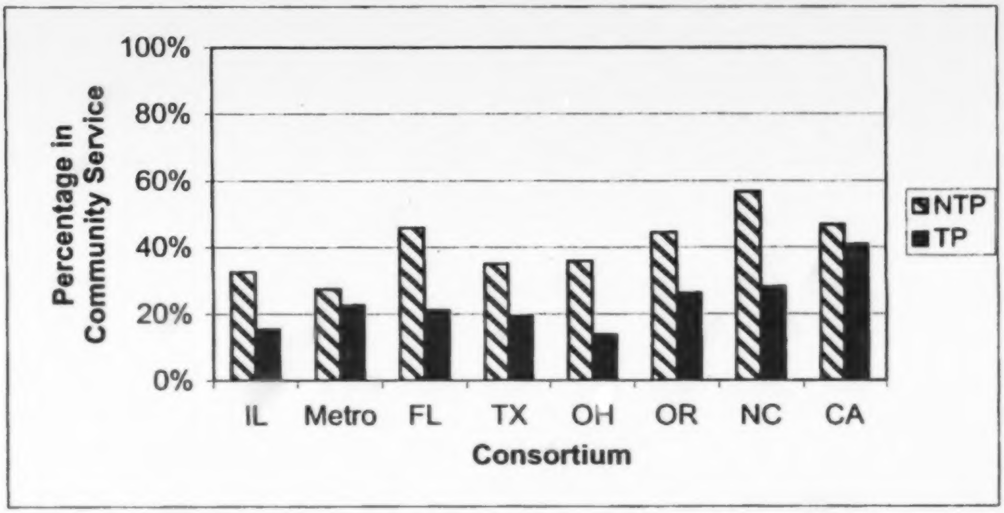

Figure 26. Percentage of tech prep participants and non-participants engaged in community service and service learning, by consortium.

In addition, in all consortia except Mt. Hood (OR), more tech prep participants indicated they were participating in tech prep programs than the non-participant group. Among the seven sites where a significant difference was found between the two study groups on tech prep participation (by self-identification), the percentage of participants who reported tech prep involvement ranged from nearly 40% in San Mateo (CA) to over 90% in Miami Valley (OH; see Figure 27). There are probably several reasons that tech prep participants do not self identify with the program, including that several consortia do not call their programs "tech prep," nor do they refer to students as "tech prep students" or "tech prep participants." Actually, in most consortia, there is no unique status to participation in tech prep, and this is done deliberately, to minimize concerns about tracking that has been troublesome for CTE programs (Bragg & Reger, 2002). Without recognition of the "tech prep" term within the schools, it should not be surprising that students would not identify themselves with the program. Why some students who are not participants, according to their schools, do identify with tech prep is a bit more puzzling, but this may be occurring because the general student population has limited understanding of the concept and is confusing participation in CTE courses with tech prep program participation. In some cases, such confusion is understandable because there are so few clear differences between tech prep and CTE, distinguishing between them is difficult except for only the most highly informed school officials.

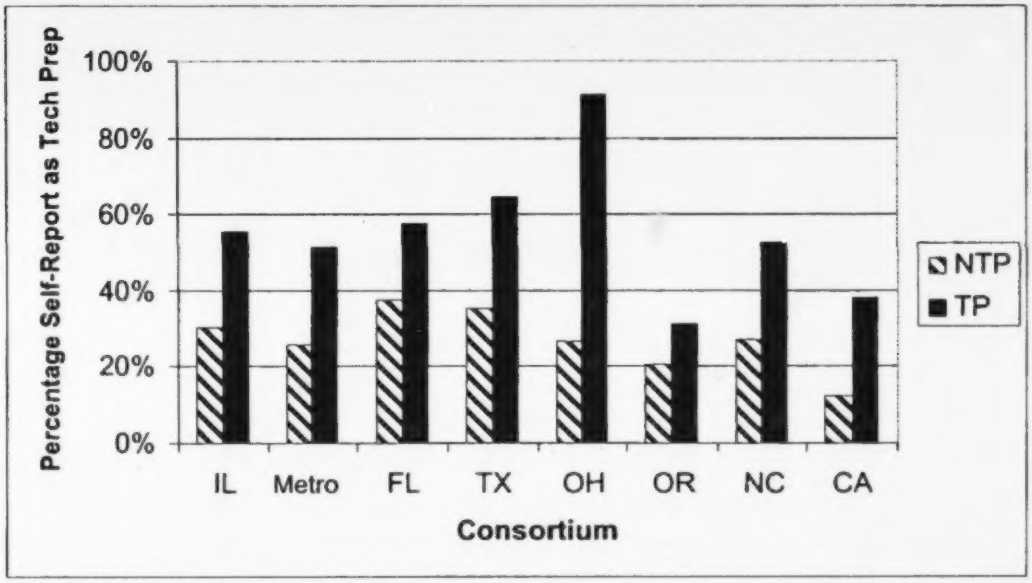

Figure 27. Percentage of tech prep participants and non-participants self-reporting participation in tech prep, by consortium.

Employment During High School

This section portrays results comparing employment status for tech prep participants and non-participants based on the 1998 *Education-To-Careers Follow-Up Survey.* In this analysis, we were attempting to determine whether tech prep participants and non-participants differed in any systematic ways in their employment status during high school. Questions addressing employment during high school ask about whether students ever held a job during high school, how much money they made per hour in their last job before high school graduation, and how many hours of work they engaged in during a typical work week. Tables showing statistical results by consortium appear in Appendix J.

Employment Status. The majority of all students held a job at some time during high school, with the proportion ranging from 65% of Metro non-participants to 90% of participants in Guilford County (NC) and non-participants in Miami Valley (OH). In East-Central Illinois (IL), Metro, Hillsborough (FL), Golden Crescent (TX), Miami Valley (OH), Mt. Hood (OR), and San Mateo (CA), there was no significant difference between tech prep participants and non-participants in the likelihood of holding a job during high school. Only in one consortium, Guilford County (NC), did we find that tech prep participants were more likely to hold a job during high school than members of the non-participant group.

In six consortia—East-Central Illinois (IL), Golden Crescent (TX), Hillsborough (FL), Metro, Guilford County (NC), and San Mateo (CA)—there was no significant difference between or among panels in the likelihood of holding a job for either the tech prep participants or non-participants. For tech prep participants in Mt. Hood (OR), the '96 panel was less likely to hold a job during high school than the '95 or '97 panels. Among Miami Valley (OH) non-participants, more members of the '97 panel had jobs than the '96 panel.

Wages Earned. Most employed students in all sites reported earning no more than $7.00 per hour during high school. In six consortia—East-Central Illinois (IL), Hillsborough (FL), Miami Valley (OH), Mt. Hood (OR), Guilford County (NC), and San Mateo (CA)—the majority of students were paid above $5.25 per hour. In the other two sites, Metro and Golden Crescent (TX), about half the students, both of tech prep participants and non-participants, were paid $5.25 or less per hour, and the remaining were paid above $5.25 per hour.

Only in the San Mateo (CA) consortium, a region with a highly diverse population and economic base, did tech prep participants and non-participants differ significantly in the distributions of wages, with tech prep participants less likely to be paid more than $8.00 than the non-participant group. In six sites—East-Central Illinois (IL), Metro, Hillsborough (FL), Golden Crescent (TX), Miami Valley (OH), and San Mateo (CA)—there was no association between panel and wages for tech prep participants or non-participants. In the other two sites, Mt. Hood (OR) and Guilford County (NC), and only among tech prep participants, we found higher wages for the later panel than the earlier ones.

Hours Worked. Only a very small proportion of tech prep participants and non-participants worked less than 5 hours or more than 40 hours per week, with this percentage ranging from 0.1% to 8% (see Figure 28). Therefore, most students with jobs worked between 11 and 30 hours. There was no association between tech prep status and hours worked per week in six sites—Metro, Hillsborough (FL), Golden Crescent (TX), Mt. Hood (OR), Guilford County (NC), and San Mateo (CA). In the other two sites, East-Central Illinois (IL) and Miami Valley (OH), tech prep participants worked more hours per week than non-participants. There was no association between panels and hours worked for either tech prep participants or non-participants in any of the eight consortia.

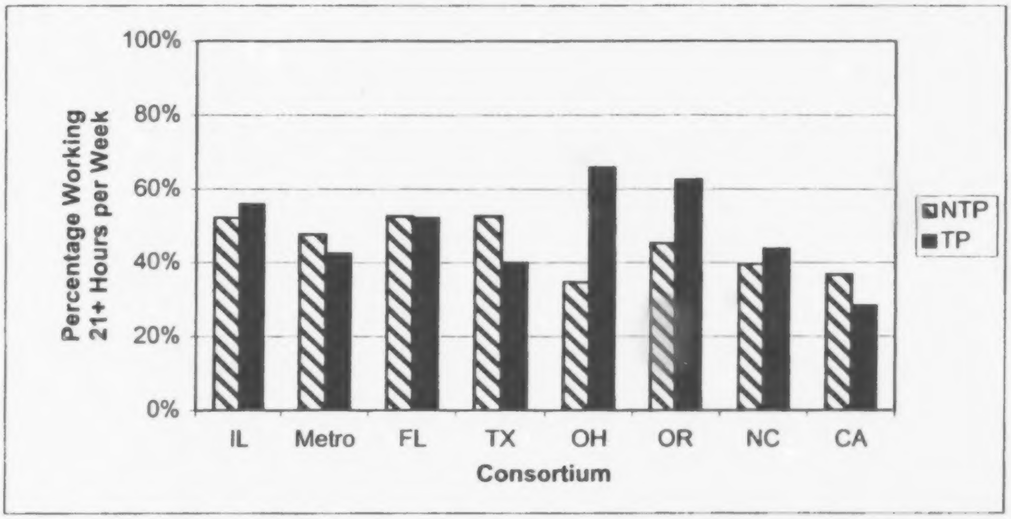

Figure 28. Percentage of tech prep participants and non-participants working 21+ hours per week during high school, by consortium.

Transition to College

This section addresses the third research question focusing on student transition to college. Specifically, we analyze results pertaining to how tech prep participants transition from secondary school to postsecondary education, including attendance at 2-year and 4-year colleges and continuation of tech prep participation at the postsecondary level. We also examine student readiness for college-level course work based on placement results using locally specified career standards and transfer standards provided by the lead postsecondary institution in each consortium. Results pertaining to these variables are analyzed for the tech prep participants and non-participants, as well as panels within these groups. Appendixes K–M provide supporting statistical tables pertaining to the analysis in this section.

Transition to 2-Year and 4-Year College

Results on transition to college (primarily 2-year and 4-year) are derived from data pertaining to two questions on the *Education-To-Careers Follow-Up Survey.* The first survey question asked students the types of colleges and universities they attended after high school, with postsecondary institutions classified as 2-year community or junior college; vocational, technical, trade, or business school; 4-year college or university; and other. The other survey question asked respondents to list the name(s) of the schools(s), location by city and state, and dates that their enrollment started and ended. Responses to the first question were augmented by responses to the second and by information from college transcripts. Participants with college transcripts were counted as having attended 2-year college, even though they sometimes failed to indicate this on the survey. Also, for this analysis, we considered the main postsecondary institution in each consortium a 2-year college, even though one of the institutions awards both associate and baccalaureate degrees. We made this determination because students engaged in tech prep were typically pursuing curricula that culminate in a 2-year college degree rather than 4-year, and our interest was in examining the experiences of these students relative to their counterparts in the other consortia.

To test for different enrollment patterns between tech prep participants and non-participants, we compared distributions among 2-year (2-year college, 2-year college and vocational), 4-year (4-year college, and 4-year and vocational), and 2- and 4-year attendance, eliminating the few students who attended only vocational schools. Tables supporting this analysis appear in Appendix K.

College Attendance

No significant differences in attendance patterns emerged except in East-Central Illinois (IL) and Miami Valley (OH). In both of these sites, participants were more likely than non-participants to attend 2-year colleges, and non-participants were more likely to attend 4-year colleges than were participants (see Figures 29 and 30). Similarly, in Hillsborough (FL), non-participants were more likely to attend 4-year schools than were participants, though the differences between the study groups in transition by type of college did not reach statistical significance at the .05 level. Thus, among those students attending college, in most consortia there was no difference based on tech prep participation in the tendency to select a 2-year or 4-year college. Where differences existed, however, they uniformly favored 2-year attendance among participants and 4-year attendance among non-participants.

In order of prevalence, the most prevalent transition paths were 2-year only, 2- and 4-year only, and 4-year for both tech prep participants and non-participants, except for Miami Valley (OH) non-participants and both groups in East-Central Illinois (IL), Metro, and Guilford County (NC). Between both Guilford County (NC) groups and for Metro non-participants, 4-year college only was most common, followed by 2-year only, then 2- and 4-year. For the tech prep participants in Metro, the order was similar, with 4-year only followed by 2- and 4-year, then 2-year only. In all four of these groups, close to half or more attended 4-year college only. For Miami Valley (OH) non-participants, the most frequent attendance was 4-year only, then 2-year only, and finally 2- and 4-year. In East-Central Illinois (IL), the paths are 2-year only, followed by 2- and 4-year, and then vocational only for tech prep participants, and 2-year only, 4-year only, and then 2- and 4-year for non-participants.

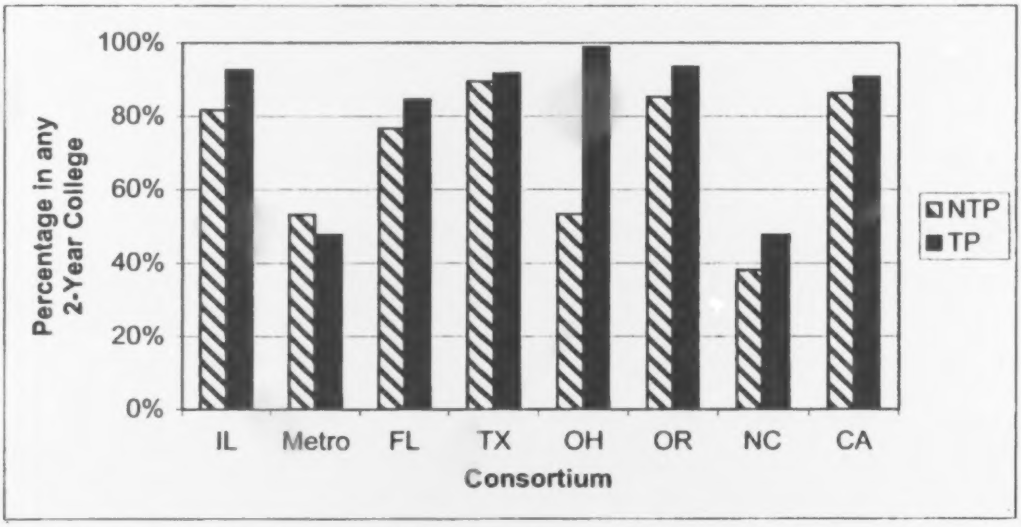

Figure 29. Percentage of tech prep participants and non-participants attending any 2-year college, by consortium.

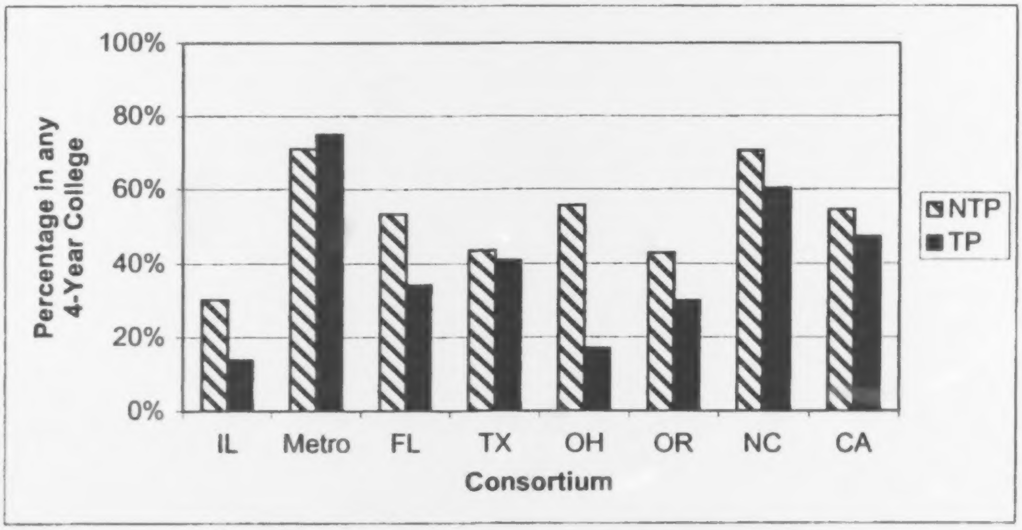

Figure 30. Percentage of tech prep participants and non-participants attending any 4-year college, by consortium.

Continuation in Tech Prep in College

To examine whether tech prep participants matriculating from high school to the main postsecondary institution were continuing enrollment in a tech prep program, we constructed as comparable a definition of *continuing tech prep* as we could for each site, taking into account idiosyncrasies in local context. Our definitions relied on local documentation as well as transcripts, as we sought evidence that students had participated in a logical sequence of tech prep (usually CTE) courses, suggesting a continuation from high school. Information about career pathways, articulated courses, and the like was crucial to constructing logical definitions. Note, this analysis is based on seven consortia, with one consortium, Metro, dropped because of inadequate information. Findings are presented for the tech prep participant group as a whole, and for panels within the tech prep group. Tables supporting this discussion appear in Appendix L. Appendix Table L1 provides a brief explanation of the definitions used in each site for continuing tech prep (CTP).

Results of the analysis reveal differences among consortia in continuing tech prep participation, especially for continuation in collegiate-level tech prep among the total high school tech prep participant group. Based on our algorithm, from 16.5% of all tech prep participants in Guilford County (NC) to 88.5% of participants in Miami Valley (OH) were continuing to the main college in the consortium *and* continuing participation in a tech prep program at the postsecondary level. Three consortia—Golden Crescent (TX), Mt. Hood (OR), and San Mateo (CA)—showed from 31% to 38% continuing participation in tech prep of the total high school tech prep participant group. Hillsborough (FL) and Guilford County (NC) revealed lower rates of continuation of tech prep in college of the total high school group, while East-Central Illinois (IL) and especially Miami Valley (OH) showed much higher rates, 45.9% and 88.5%, respectively.

Looking at the whether tech prep participants who enroll at the community college then continue their participation in a tech prep program, we find a slightly more uniform pattern, with a few noteworthy exceptions. In four consortia—Golden Crescent (TX), Mt. Hood (OR), Guilford County (NC), and San Mateo (CA)—the percentage of tech prep participants who enrolled at the lead college ranged from 53% to 56%. A lower rate of continuation was seen in Hillsborough (FL), 43%, but a much higher rate was evident in East-Central Illinois (IL), 75%, and Miami Valley (OH), 95%.

These results show differences in matriculation to the lead college after high school for tech prep participants (as is discussed elsewhere in this report). What is more important in this set of findings is evidence that there is a good chance that tech prep participants will remain in a tech prep course of study once they matriculate to the lead community college. Except in two consortia, Hillsborough (FL) and Golden Crescent (TX), more tech prep participants continuing to the lead college chose courses aligned with tech prep than any other curricula, such as the transfer curriculum.[4] Even in the cases of Hillsborough (FL) and Golden Crescent (TX), over

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[4] Cohen & Brawer (1996) define transfer as "the matriculation of students from the community college to the university, wherein the credits that students earn at the two-year level are accepted for credit toward to baccalaureate degree" (pp. 330–331).

40% chose a tech prep program, and certainly the retention of high school tech prep participants as continuing tech prep participants at the lead college in Miami Valley (OH) is especially impressive.

College Placement

This section provides a discussion of college placement as a measure of readiness for college for tech prep participants and non-participants in seven consortia—East-Central Illinois (IL), Metro, Hillsborough (FL), Golden Crescent (TX), Miami Valley (OH), and Guilford County (NC)—all of which provided sufficient information to allow for detailed statistical analysis. Since tech prep is promoted as a way of preparing students for postsecondary education through the integration of academic and CTE curriculum and articulation between the secondary and postsecondary levels (Parnell, 1994), it is important to understand how well prepared tech prep participants are for college. Thus, how tech prep programs influence students' readiness for college is a particularly important issue deserving of investigation here.

Looking specifically at how colleges treat remediation/developmental education, each lead college under study applied its own unique standard to being college-ready, and most applied different standards for career programs and transfer programs. Generally speaking, transfer programs had higher standards for entry into college-level courses than career programs. Of the two standards, nearly all tech prep programs in these consortia use the career standard for students matriculating into college-level tech prep programs because they typically affiliate tech prep with the Associate of Applied Science (AAS) degree for the occupational curriculum. However, with heightened interest in college tech prep, whereby tech prep participants enroll in 2-year college tech prep programs and transfer to the bachelor's level, or matriculate directly from high school tech prep to baccalaureate programs, an analysis of students' ability to meet both the career and transfer standards seemed important. Recognizing this, our analysis included assessment of the college readiness of tech prep participants and non-participants using both standards. In so doing, we were able to determine the extent to which students were meeting each standard, with the career standard acting as a measure of students' readiness for college-level programs that mostly emphasize immediate employment upon college graduation and transfer standards acting as a measure of students' readiness for college-level studies that facilitate transition to the bachelor's level. Again, since federal legislation on tech prep (Perkins III) increasingly emphasizes both goals, it is important to understand student preparation for both paths.

Two questions guided this investigation. First, how do tech prep participants perform on community college placement tests in mathematics, reading, and writing compared to non-participants? Second, what levels of mathematics, reading, and writing skills do tech prep participants and non-participants attain, based on cut-off scores set by colleges, utilizing career and transfer standards? Results are based on transcript analysis as well as placement test scores provided for all students who entered the lead college, participated in placement testing, and had both high school and college transcripts. Appendix Table M1 details the sample used for each consortium. Briefly, placement information was available on from 65% to 100% of the study groups in the consortia. To interpret transcripts and test scores, we obtained institutional policies and collected supporting information via telephone and personal interview with personnel in each institution to accurately interpret them. Tables with statistical information supporting this discussion are contained in Appendix M.

College Placement (Career Standard). Using the career standard set by local institutions, results showed that 40%, in Hillsborough (FL), to nearly 80%, in Golden Crescent (TX), of tech prep participants placed into college-level course work overall (see Figure 31). The range was even larger for non-participants with 28%, in Guilford County (NC), to 76%, in Golden Crescent (TX), placed into college-level studies. Differences were observed between the tech prep participant and non-participant groups in two consortia—Hillsborough (FL) and Guilford County (NC)—at the $p < .05$ level, with results approaching significance in two other sites—East-Central Illinois (IL) and Miami Valley (OH). Fewer tech prep participants were placed into college-level course work, i.e., considered "college ready," than non-participants in the Hillsborough (FL) consortia, whereas more tech prep participants were considered college ready in the Guilford County (NC) consortium. Though not statistically significant, more Miami Valley (OH) tech prep participants were placed into college course work than non-participants; more non-participants were placed at the college level in East-Central Illinois (IL).

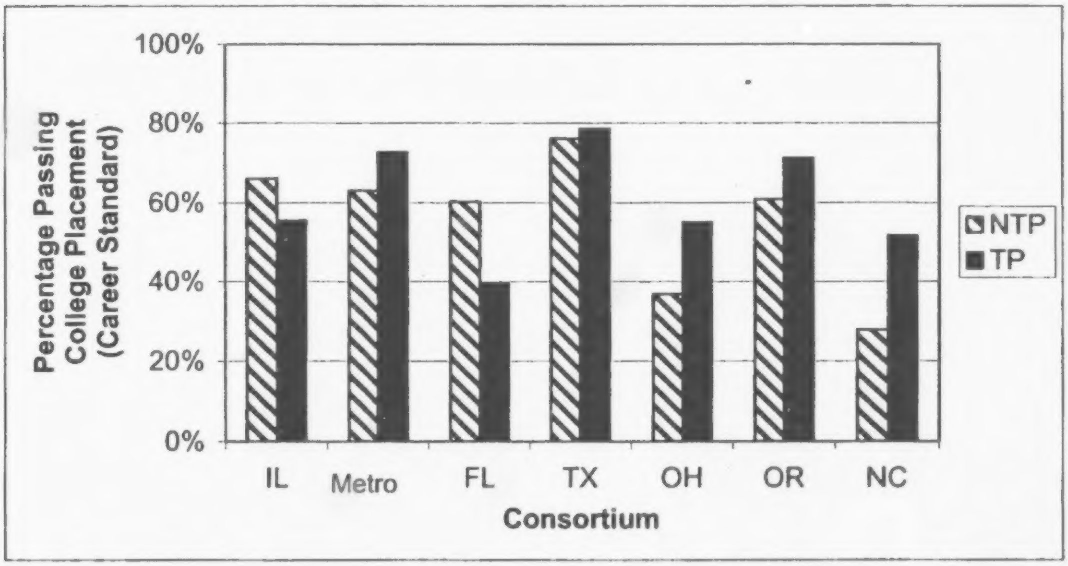

Figure 31. Percentage of tech prep participants and non-participants passing college placement tests based on career standard, by consortium.

College Placement (Transfer Standard). Using the transfer standard set by each institution, from 13%, in Hillsborough (FL), to 52%, in Golden Crescent (TX), of students were college ready, with the vast majority of students not ready for college-level studies in any consortia except Golden Crescent (TX; see Figure 32). Even in this site, just slightly over 50% of each group met the transfer standard for college readiness. A difference between the study groups was observed in only one consortium, and that was East-Central Illinois (IL), where non-participants were more likely to be placed into college-level course work than tech prep participants. In this site, 44% of the non-participants placed into college-level course work, compared to 29% of the tech prep participant group.

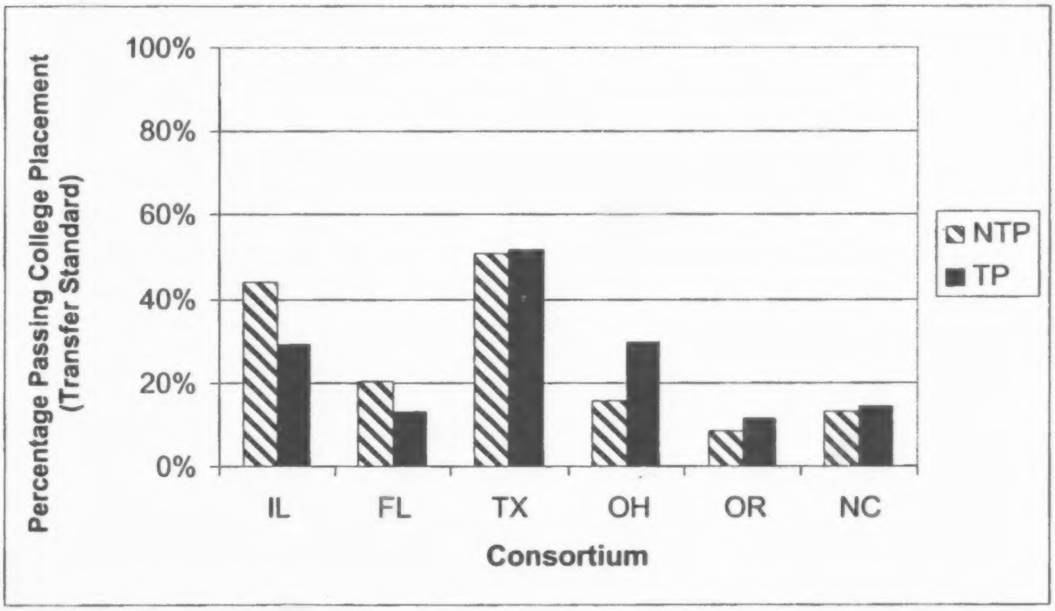

Figure 32. Percentage of tech prep participants and non-participants passing college placement tests based on transfer standard, by consortium.

College Placement by Subject Areas. Results for math parallel overall college placement findings, in terms of the readiness of tech prep participants and non-participants in the study groups. Indeed, if students were likely to fail a placement test, it was usually in the math area, and difficulties with math placement tests were evident for the majority of students in both study groups in all consortia, especially using the transfer standard. However, group differences were evident in the Hillsborough (FL) and Guilford County (NC) consortia, with results in the same direction as the overall college placement decision. An examination of placement results showed that Hillsborough (FL) non-participants were placed into college-level course work at a higher rate than tech prep participants, but more tech prep participants placed at the college level than the comparison group in Guilford County (NC). When using the career standard, from 50%, in Hillsborough (FL), to 94%, in Metro, of tech prep participants were placed into college-level math, compared to from 44%, in Guilford County (NC), to 85%, in Metro, of the non-participant group (see Figure 31). When using the transfer standard, from 10%, in Mt. Hood (OR), to 52%, in Golden Crescent (TX), of tech prep participants, and from 9%, in Mt. Hood (OR), to 51%, in Golden Crescent (TX), of the non-participants placed at the college level in math (see Figures 33 and 34).

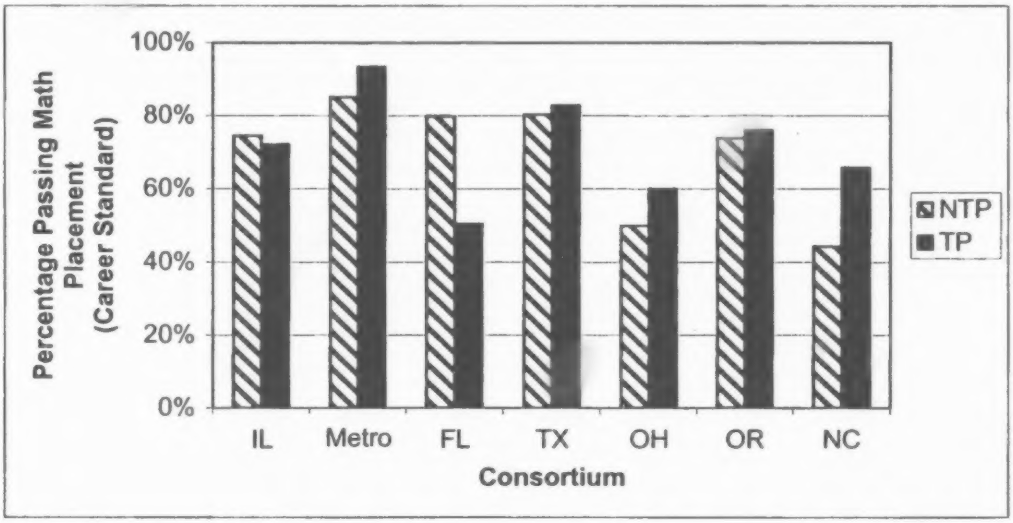

Figure 33. Percentage of tech prep participants and non-participants passing college placement tests in math based on career standard, by consortium.

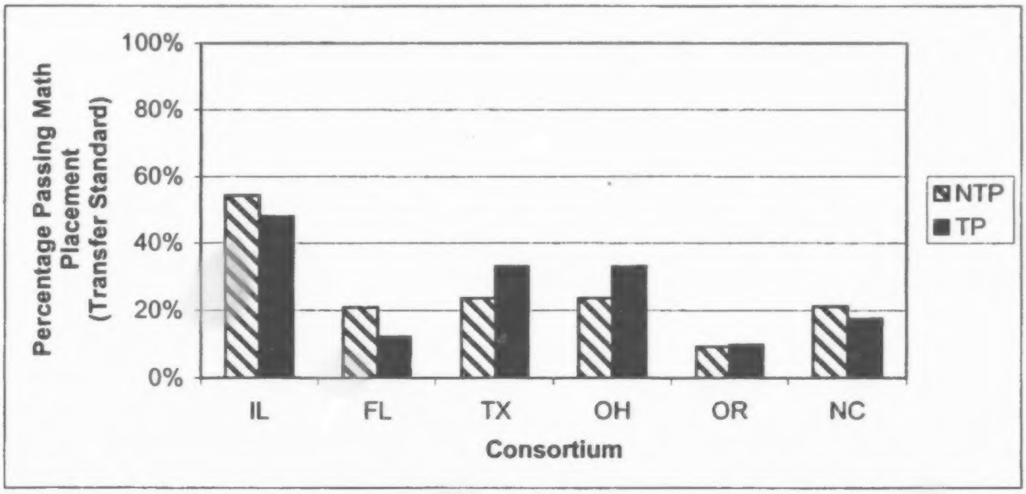

Figure 34. Percentage of tech prep participants and non-participants passing college placement tests in math based on transfer standard, by consortium.

Similarly to overall placement decisions and placement in college math, writing sometimes had different standards (career and transfer) in two consortia—East-Central Illinois (IL) and Mt. Hood (OR)—with only one standard in the remaining consortia, which we listed with results pertaining to the career standard (see Appendix Table M1). Results on college placement in writing were much higher than results for math, with from 66%, in Hillsborough (FL), to 92%, in Golden Crescent (TX), of tech prep participants being assessed at college-level course work in this area. Differences between the tech prep participants and non-participants were noted in writing in two consortia—Metro and Miami Valley (OH). In both of these consortia, tech prep participants were more likely to place into college-level course work than non-participants, with 82% of the Metro tech prep participants placing at the college level, compared to 67% of non-participants. In Miami Valley (OH), 78% of the tech prep participants placed into college-level course work, compared to 55% of the non-participant group.

Finally, our analysis included placement in reading, and only one standard existed in all consortia in this area. A high percentage of students usually placed at the college level based on the reading assessment, with from 67%, in Hillsborough (FL), to 89%, in Golden Crescent (TX) and Mt. Hood (OR), of tech prep participants being assessed at the college level. Results were similar for the non-participant group in all consortia except in Miami Valley (OH), where tech prep participants (85%) were much more likely to place into college-level course work based on the reading assessment than were non-participants (53%).

College Enrollment, Persistence, and Completion

This section examines college enrollment, persistence, and completion among the students in each study group, comparing the participant and non-participant groups with analysis of panels, when sufficient sample size allowed. The specific research question that is addressed in this section is: For those students who continue to the lead college, what are tech prep participants' experiences in college-level studies and outcomes, including enrollment, persistence, and completion of credentials? And, do college-level enrollment, persistence, and completion differ for panels of tech prep participants and non-participants? Data used to address these questions was obtained from college transcripts collected initially in 1998–99 and further updated in 2000–01, with college-level course taking coded through summer 2001. Statistics supporting the following discussion are shown in the tables in Appendix N.

College Enrollment

Based on college transcripts, enrollment at the lead higher education institution in the consortium was generally high. The median enrollment rate for the eight sites was 57%, with four consortia close to this rate. Miami Valley (OH; 93%) and San Mateo (CA; 80%) had higher rates, while Metro (22%) and Guilford County (NC; 28%) had the lowest rates of enrollment.

Enrollment of tech prep participants exceeded that of other students at all but one of the sites, though several of these differences were very small, and only two of them—Golden Crescent (TX) and Miami Valley (OH)—were significant. In Hillsborough (FL), tech prep participants enrolled in significantly smaller proportions than did their non-participant classmates. Pooling the eight sites confirmed the general tendency for higher attendance rates for tech prep participants (54%) than for other students (47% [$\chi^2 = 24.158$, $df = 1$, $p < .001$]) at the lead college. However, the very high proportion of Miami Valley (OH) tech prep participants enrolling in the community college may suggest a problem with the sampling procedure or the data, both of which deserve further investigation.

Persistence and Completion

At the same time, however, completion of a degree (AA, AS, or AAS) or certificate was not a common occurrence in any consortium. The median percentage of students earning some credential was only 10.5%, usually 3 or 4 years after high school graduation. The one exception was Guilford County (NC), where a substantial number of students completed high school in 1998 and had only 2 years post-high-school for college enrollment. At the low end, in San Mateo (CA), the percentage of program completion was 5.5%, and at the high end were East-Central Illinois (IL) and Miami Valley (OH). At both sites, about 18% of those enrolling at the lead college had completed a college credential. Most other consortia reported a more moderate range of completers, at 8.5% to 11.7%. Readers are reminded again that students in Guilford County (NC) were sampled from high school graduates in '96, '97 and '98, representing a more recent set of cohorts than the other groups, so it is unreasonable to compare degree completion for Guilford County (NC) against the other consortia, where students had more time to amass their academic records. Indeed, 8.0% of Guilford County (NC) students earned a credential, toward the lower end of the consortia.

Tech prep participants and non-participants were compared on persistence and program completion by comparing the numbers of each group who completed a credential, who failed to complete but were still enrolled at the end of this study (in summer 2001), or who failed to complete and were no longer enrolled. In all consortia, the proportions of the participants and non-participants in each of these categories were quite similar, and none of the distributions differed significantly.

Cumulative Hours (Non-Developmental) and Credentials

Total of cumulative hours earned, which included non-developmental hours earned at the lead college or earned elsewhere and transferred, ranged from an average of 25, in Hillsborough (FL) and Guilford County (NC), to a high of 51, in Miami Valley (OH), with a median of 31. All consortia except Miami Valley (OH) averaged between 25 and 34 hours. On both credentials and total college-level hours earned, there were a handful of differences among the panels, generally favoring earlier panels in which students had a longer time to work toward credentials. As described above, with panels combined, there were no significant differences between tech prep participants and non-participants in proportions of students completing a degree or certificate, continuing enrollment, or having ended their enrollment at the community college. For two consortia, East-Central Illinois (IL) and San Mateo (CA), tech prep participants earned more college-level hours than did non-participants. However, these comparisons suffer from the potential for panel differences in the time available to earn hours and complete a program to mask or distort differences between tech prep participants and non-participants. Thus, the two outcome variables were regressed on panel, e.g., '95, '96, and '97, and tech-prep participation status. For degrees earned, the outcome variable was the binary criterion indicating whether the student earned a credential or did not, and logistic regression was employed. For college-level hours earned, ordinary least squares was used. Results of these analyses follow.

For certificates earned, panel was significant and negative in East-Central Illinois (IL) and San Mateo (CA), but not elsewhere. The residual effect of tech-prep participation after panel was accounted for was not significant in any consortium. For college-level hours earned, panel had a significant negative influence in four sites: East-Central Illinois (IL), Hillsborough (FL), Metro, and San Mateo (CA). In East-Central Illinois (IL) and San Mateo (CA), the significant positive relationship of tech prep participation with college-level hours earned remained after panel was accounted for, but tech prep participation was unrelated to hours earned in the other six consortia. Thus, there were few differences between participants and non-participants in either outcome, but the two differences that emerged favored the tech prep participants.

Cumulative and First-Term Hours

A final set of outcome variables involved proportion of hours earned at the lead college that were remedial, both cumulative and in the first-term only, and the proportion of hours attempted that were earned. Proportions of attempted hours that were earned, i.e., completed with a passing grade, were calculated separately for remedial and college-level courses, and for each of these, separately for cumulative and first-term only. Six variables resulted.

The median percentage of earned or completed hours at the lead college that were remedial was 12.6 for the first term and 9.6 for the cumulative record, reflecting the tendency for the later terms to involve more college-level, and less remedial, coursework. At sites where remedial courses were not offered for credit, hours attempted and earned were imputed from the transcripts and/or catalogs. However, these ratios could not be calculated for Mt. Hood (OR), where information to impute semester hours for the non-credit remedial courses was not available, and only the number of courses completed was available for the remedial courses. For the first term, East-Central Illinois (IL) and Miami Valley (OH) were relatively low, but only slightly below the median in percentage of hours earned or completed that were remedial (11.1% and 11.4%, respectively). Both Guilford County (NC), with 20.0%, and Metro, with 41.1%, were substantially above the average level. Cumulatively, six of the seven ranged from 6.5% to 12.6%, within three percentage points of the median. Metro, however, was substantially higher, at 18.3%. (Note: These results focus on hours completed in remedial/developmental education, as opposed to placement test scores reported previously in the section on college placement.) There was only one panel difference for these two variables; therefore, panels were pooled in these analyses. These results suggest that the average proportion of completed semester hours that are remedial/developmental is not terribly high in most consortia.

The percentage of attempted developmental hours that were earned or completed had a median value of 74% for both first-term and the cumulative record. The range for the first term was 62%, in Metro, through 80%, in Hillsborough (FL). Cumulatively, the range was 64%, in Golden Crescent (TX), to 78%, in Miami Valley (OH). Cumulatively then, students complete about two thirds to four fifths of the remedial semester hours they attempt. Differences between tech prep participants and non-participants were few and varied in direction. In Miami Valley (OH), tech prep participants completed a lower proportion of the remedial hours that they attempted, both first term and cumulatively, than did non-participants. In Golden Crescent (TX), the cumulative difference was significant, and favored tech prep participants over non-participants, while there was no significant difference in the first term. Because of the possibility that the cumulative proportion of attempted hours earned would be affected by panel because of differences in number of hours attempted, the analysis was rerun for the cumulative proportion with panel controlled in an analysis of covariance. No change was found in the direction or significance of the results at any consortium.

Finally, proportions of college-level hours attempted that were earned at the lead college were evaluated for the first term and cumulatively. The median percentage earned cumulatively was 70.7%, and for the first term was 78.5%. For the first term, six consortia ranged from 66.5%, in Guilford County (NC), to 83.7%, in Mt. Hood (OR). Metro was relatively low in completion rate, at 62.4%, while Miami Valley (OH) was relatively high, at 88.8%. Cumulatively, four sites ranged from 67.6% to 75.2%, with the lows being Metro (60.8%) and Guilford County (NC; 62.2%) and the highs being Mt. Hood (OR; 77.1%) and Hillsborough (FL; 77.5%). The only differences between tech prep participants and non-participants were in Mt. Hood (OR), where tech-prep students completed more of the college-level hours they attempted in the first term, and in San Mateo (CA), where the cumulative completion rate was higher for non-participants than for tech prep participants. An analysis of covariance controlling the cumulative completion rate for panel effect produced no change in these results.

Overall then, completion rates of remedial/developmental and college-level hours were similar, on the average, and averages ranged from about two thirds to four fifths, from site to site. Differences between participants and non-participants in completion rates were few, with no consistent tendency as to direction.

Work Experience After High School

To understand the work experiences of tech prep participants as compared to non-participants after graduation from high school, we administered the *Education-To-Careers Follow-Up Survey* in 1998—in 1999 for Guilford County (NC) and San Mateo (CA)—and again to the entire study population in 2001. The employment section of the follow-up survey asked respondents to indicate the following types of information: number of jobs since graduating from high school; employment status (full-time, part-time, unemployed, military); number of jobs held at present; months, hourly wage, type (entry-level, semi-skilled, skilled or technical, professional); satisfaction with primary job; and expectations for future employment (job type desired, and confidence in fulfilling ultimate career goal). The analysis was constructed to answer the following research questions: What are the work experiences of tech prep participants after high school graduation? How do tech prep participants work experiences compare to non-participants? Do work experiences differ for different panels of tech prep participants and non-participants? Appendix O presents supporting tables, providing a comparison of tech prep participants and non-participants on the above-mentioned variables. Results derived from the follow-up survey range from only a few months to 3 years post-high-school.

Employment Status

Based on responses to the survey, about one third to one half of respondents were employed full time (more than 35 hours per week) at the time of the survey, and almost all students were working at least part time. Employment status of participants and non-participants did not differ, except in Guilford County (NC), where there was a tendency for more tech prep participants than non-participants to hold full-time jobs. This tendency was evident in all but the Metro consortium, though significant only in Guilford County (NC).

There was only one difference among panels, seen among non-participants in the Metro site. Here the earliest panel appeared more likely than others to hold full-time employment.

Number of Jobs after High School

Most of the students had held one to three jobs since high school, ranging from 75% to 91% in the eight consortia. There were no differences between participants and non-participants in the distribution of number of jobs. Several panel differences were in evidence, however. Because of large numbers of cells with low expected frequency, the category *No job* was deleted, and four and five jobs were collapsed into one category in testing panel differences. Significant differences were found among tech prep participants in two sites—Hillsborough (FL) and San Mateo (CA)—and among non-participants also in one of these, San Mateo (CA). In all three cases, earlier high school graduates tended to have held more jobs than had more recent graduates.

Employment Time on Current Job

This survey question asked how long respondents had been on their primary job, i.e., the job at which they spend the largest amount of time each week. Most respondents (73% to 82%) reported having been at the present job for less than 2 years, and in all but one consortium, San Mateo (CA), participants and non-participants did not differ in this regard. In San Mateo (CA), where there was a difference, participants tended to have held their current jobs a bit longer than had non-participants.

Panel differences on length of current job were significant only in East-Central Illinois (IL) and Hillsborough (FL), and these differences applied to tech prep participants only. In both cases, the earlier panel was likely to have held their current job longer than the later panel.

Job Type for Current Position

Most respondents (75% to 88%) indicated that their current primary job was unskilled or semi-skilled, rather than skilled or professional. Tech prep participants and non-participants did not differ much in the types of jobs they held, whether unskilled, semi-skilled, skilled, or professional, except in East-Central Illinois (IL). In that consortium, tech prep participants were more likely to hold semi-skilled, and less likely than non-participants to hold unskilled jobs.

In order to compare the jobs held by participants and non-participants shortly after high school, we compared current job type for those who had had only one or two jobs since high school. In three consortia—East-Central Illinois (IL), Guilford County (NC), and Mt. Hood (OR)—participants and non-participants differed, with the tech prep group having more semi-skilled jobs, and the non-participants having more unskilled jobs. This pattern persisted in most sites, although it was not significant in all. Thus, there is some suggestion that tech prep participants enter the labor force at the semi-skilled level more than non-participants, who are more likely to enter at the unskilled level.

There is also an association between full- or part-time employment status and job type. In six consortia—all but Miami Valley (OH) and Mt. Hood (OR)—students with full-time jobs tended to be in higher level jobs than the part-time group. The same tendency was also seen in Miami Valley (OH) and Mt. Hood (OR), though not statistically significant.

Comparison of current job type for all participants and non-participants with full-time and, separately, part-time jobs, revealed that only in East-Central Illinois (IL) did the tech prep participants with full-time jobs hold higher level jobs than the full-time employed non-participants.

Job Expectation

Asked the type of job they want to have ultimately, most of the students (60% to 78%) reported wanting professional jobs. Only in Hillsborough (FL) was there a difference between participants and non-participants in this regard, with more non-participants than participants wanting professional jobs.

Wages Earned

The average hourly salary on the current job was compared for participants and non-participants using the median test. Only East-Central Illinois (IL) demonstrated a significant difference between the two groups, with the median salary of participants exceeding that of non-participants. This tendency was evident in most sites, though not significant, except in Illinois.

Panel differences were significant for both groups in Metro and Guilford County (NC), and for non-participants in Hillsborough (FL), with some tendency for earlier panels to earn more than later ones.

Job Satisfaction

Students were asked to indicate their degree of satisfaction with their primary job, using a 5-point scale, with 1 = *not at all satisfied*, 2 = *somewhat satisfied*, 3 = *fairly satisfied*, 4 = *very satisfied*, 5 = *extremely satisfied*. In all consortia, the mean was 3 or a bit less, indicating that, on the average, they were fairly satisfied, at best. Neither group, participants nor non-participants, indicated more satisfaction than the other. Furthermore, satisfaction did not seem to change much as a function of years out of high school, for there was only one panel difference.

Confidence in Reaching Career Goal

Students were asked about their confidence in reaching their career goal, using a 5-point scale from 1 = *not at all confident* to 5 = *extremely confident*. On the average, they felt *very confident*, with means ranging from 3.9 to 4.3. There were no differences between participants and non-participants in mean confidence, and no panel differences, either.

CONCLUSIONS AND IMPLICATIONS FOR POLICY AND PRACTICE

This report presents results of a 4-year longitudinal study examining students' educational experiences and outcomes in eight tech prep consortia located in different regions of the country. The study provides a quantitative analysis comparing students' experiences as participants in tech prep programs, as well as their post-high school educational and employment outcomes. Findings are presented for students identified locally as participants in tech prep programs, referred to as *tech prep participants*, compared to a group of students drawn from the general student population with similar academic performance at high school graduation, referred to as *non-participants*. The study addresses fundamental questions of how tech prep programs relate to student experiences and outcomes. Considering the enduring federal commitment to tech prep implementation beginning with the Carl D. Perkins Vocational and Applied Technology Education Act of 1990 (Perkins II), this study makes a valuable contribution to the literature because it advances knowledge of the various ways in which tech prep programs engage and influence students.

This concluding section reintroduces the five research questions, followed by major results and conclusions relevant to each. Conclusions are summarized for each question to illuminate patterns that cut across the eight consortia, as well as distinct findings associated with one or a few sites that contribute to enhanced understanding of student experiences and outcomes. Implications for policy and practice conclude this report, suggesting ways results can contribute to improving future educational endeavors.

Major Conclusions

What are the selected demographic, personal, and background characteristics of tech prep participants, and how do these characteristics compare to a similar group of students identified as non-participants?

Tech prep participants did not differ from non-participants on gender in five consortia, with tech prep participants and non-participants fairly evenly divided between male and female. There was a tendency, however, for some local consortia to involve more males than females in their overall tech prep initiatives. In three consortia, fewer tech prep participants were female than non-participants, and this pattern held in a fourth site where more males than females were engaged in youth apprenticeships. Further analysis showed these consortia offered a substantial number of tech prep programs involving preparation for careers in electronics, information technology, engineering technology, manufacturing, and other fields that traditionally attract high numbers of male students. Even so, some tech prep programs were involving females in fairly substantial proportions (20% to 35%), but females still constituted a minority of the overall tech prep initiative in these four sites.

Few differences between the two study groups were evident in other demographic and personal characteristics in race/ethnicity, family income, or the education levels of mother and father, though fathers of tech prep participants tended to have less education than non-participants, and this result was significant in two consortia. Further, most students still had a close bond with their families, as evidenced by well over 80% of both groups being single, and about 60% still living at home 1 to 3 years after high school graduation. When asked about the utility of their high school education, only about one fifth perceived that their secondary schooling was very or extremely useful—suggesting some discontentment among the majority of students with the usefulness of high school studies.

With respect to demographics and personal characteristics, these results fall far short of tracking of minority and low-income students into tech prep programs, as was purported for vocational education by Oakes (1985), Wilms (1977), and others, but they do suggest a tendency for tech prep participants in some consortia to have less cultural capital (Labaree, 1997) than their non-participant counterparts.

What are participants' course-taking patterns and performance at the high school level, particularly math, science, English, and CTE, and how do tech prep participants compare to non-participants? How does work experience during high school compare for tech prep participants and non-participants?

Most students in all consortia received grades of B- to C in their high school math and science courses, with tech prep participants performing comparably to non-participants in all but two consortia (in one site, tech prep participants performed higher; in another they received lower grades than non-participants.) Four consortia showed group differences in the amount of high school math courses taken, with participants in one site taking more semesters than non-participants, but non-participants exceeding participants in the other three. Group differences were also evident in the amount of science courses taken in seven consortia. Specifically, non-participants exceeded participants in the total semesters of science taken in five consortia, but in two other sites (one consortium, and one high school within another consortium), tech prep participants took more science than their non-participant counterparts.

Group differences were noted in the amount of math and science courses taken at different levels in nearly all consortia. Tech prep participants in four consortia took about the same number of semesters of math overall, but took less basic math, more regular math, and about the same amount of AP/honors math as the comparison group, suggesting participants were advancing to competency levels sooner in high school than non-participants. In the three remaining consortia, however, tech prep participants took more basic math, about the same amount of regular math, and less AP/honors math than non-participants, suggesting tech prep participants were attaining slightly less advanced math than non-participants. In one noteworthy case, tech prep participants started math at a lower level (45% in basic math) and finished at a higher level (87% in algebra II or higher) than the non-participant group. In terms of science, even though most students in both study groups were taking mostly regular science (e.g., biology, chemistry), differences were noted between groups in six consortia in the level of science courses taken. In a few consortia, tech prep participants were taking more lower-level science courses than non-participants, but in most consortia, the differences between groups was related to differences in the proportion of students taking regular, regular honors, and physics courses—all of which are well beyond a basic level.

Finally, the majority of students took math in the 12th grade in all consortia, and one consortium showed a higher rate of 12th-grade math course-taking among participants than non-participants, whereas two revealed lower rates of 12th-grade math course-taking among participants than non-participants. Science course-taking in the 12th grade was less consistent across sites, with the proportion of all students ranging from 10% to 85% among tech prep participants, to 11% to 61% for non-participants. Group differences were noted in five consortia, with tech prep participants more likely to take science in 12th grade in one consortium and one high school, but less likely in the other sites.

Except for one consortium, no differences were observed between the tech prep participant and non-participant groups in English performance, with the grade ranging from about B- to C+, on average. In the consortium that did not fit this pattern, non-participants had a higher average grade than participants. Also in this consortium and one other, tech prep participants accumulated fewer total semesters of English during high school, but we found no such differences between study groups in any other sites. Similarly to math and science course-taking, differences were noted between the study groups in most consortia, but some were more meaningful than others. In three consortia, non-participants were more likely to take basic English than participants, but one consortium showed the opposite result, wherein tech prep participants were about twice as likely as non-participants to be taking basic English. In four consortia, tech prep participants and non-participants were equally likely to take AP/honors English, but more non-participants were taking these courses than participants in the other four sites. Finally, more than 90% of both study groups took English in the 12th grade in all consortia except in one, where tech prep participants exceeded non-participants both in the percentage taking 12th-grade English and in the mean number of 12th-grade English semesters taken.

Career-technical education (CTE) course-taking was measured using the definitions of vocational concentrator and vocational specializer used by NCES (see, for example, Houser, 1995; Levesque et al., 2000). Overall, tech prep participants were much more likely to be vocational concentrators than were non-participants, as evidenced by 61% of all tech prep participants and 36% of non-participants being vocational concentrators, and this pattern emerged in seven consortia with significant differences between the study groups in five. Students who met this classification have taken three or more Carnegie units of CTE courses, indicating they have accumulated a substantial number of courses in one career path or CTE cluster area. Specialization in one career area beyond the concentration level was observed less frequently, but it was apparent in five sites. In one of these, tech prep participants were nearly as likely to be vocational specializers as concentrators, indicating most of the tech prep participants in this site were amassing four or more Carnegie units in a particular CTE area, which is an astonishing amount of career-related course-taking at the high school level. Enrollment in particular career fields varied from one consortium to another, depending upon the emphasis of the local program. Within particular career fields, however, the proportion of tech prep participants often exceeded non-participants, sometimes by a substantial amount.

Our analysis sought to identify not only whether students concentrated in CTE fields, but whether they had a concentrated focus on academic subjects, as evidenced by participation in a modified version of college prep. Results indicate a majority of tech prep participants and non-participants were not taking a college-prep program, though there were exceptions. Over 70% of non-participants in one consortium met the modified-college prep definition, and slightly over one half of the tech prep participants in another site were college prep-participants. Differences between the study groups was evident in five consortia; in four of these, non-participants were more likely to be participating in a college prep program of study than in tech prep.

Relationships were found between tech prep status, vocational concentration/specialization, and college prep in five sites. In most of these, we found a greater likelihood of vocational concentration if students (either tech prep or non-tech prep) were not participating in college prep. However, in the other three consortia, we found no association among these variables, suggesting tech prep participants who were vocational concentrators were neither more nor less likely to be participating in college prep. So few vocational specializers and college prep-participants were evident in most sites, conclusions cannot be drawn with confidence about this variable. Overall, these results suggest involvement in more CTE course-taking may have a dampening effect on college prep, but this need not be the case. Vocational concentrators in two consortia were no more or less likely to be involved in college prep than other students.

Articulated course-taking was substantial for tech prep participants in the five consortia providing sufficient information for analysis. It ranged from 65% to 91% for tech prep participants, and 31% to 76% for non-participants in the five sites. In four of these, participants in tech prep were more likely to take articulated courses than were non-participants. Moreover, among students who took articulated courses in all five consortia, tech prep participants took significantly more semesters, on average, than non-participants. The most prevalent career areas for articulated course-taking in CTE across the five sites were business, mechanics/repair, and precision production. Articulated course-taking was identified in math and science in only two consortia, with non-participants in one of these consortia showing greater participation than participants.

Based on follow-up survey results, we learned that most students in seven of the eight consortia participated in at least one form of work-based learning (WBL). In four sites, tech prep participants were more likely to participate than non-participants, with no group differences in the remaining sites. Students were involved in a diverse set of work-based learning strategies, but greater participation occurred in a few forms, such as co-op for tech prep participants, community service/service learning for non-participants, and job shadowing for both.

When asked about work-based learning on the follow-up survey, respondents were also asked whether or not they were participating in tech prep, and some interesting results emerged. In all consortia, except one where only 20% to 30% of either group indicated tech prep, more tech prep participants self-identified with tech prep than non-participants, though the percentage varied widely from a low of almost 40% to a high of about 90%. Since many consortia do not call their programs "tech prep," nor do they refer to students as "tech prep students," it is not all that surprising that students would not recognize this terminology. Still, it is curious that so many students who are participating in a program designed specifically for them would not identify with it. It is also puzzling that students who are not participating in tech prep would indicate that they are tech prep participants, but this may be occurring because such limited understanding exists about these programs among students and faculty, and also because of the possible misidentification of CTE course-taking as fulfilling the requirements for tech prep.

Finally, with respect to secondary experiences, we asked students completing the follow-up survey to indicate if they had held a job during high school. Indeed, the majority of all students held a job at some time during high school, with the proportion ranging from 65% to 90%. Most of these students were employed in relatively low-wage jobs, earning no more than $7.00 per hour, and most worked between 11 and 30 hours per week. Few differences were identified between the study groups in the majority of consortia, with the occasional difference showing no consistent or interpretable pattern.

How do tech prep participants experience the transition from secondary school to college, including readiness for college-level course work and continuation of tech prep participation? How do tech prep participants compare to non-participants?

Based on results of the follow-up survey, in order of prevalence, the most prevalent transition paths were 2-year only, 2- and 4-year, and 4-year only for both tech prep participants and non-participants. The percentage of students who were indicating attendance at the 2-year college level was quite high, with over 80% of the tech prep participants in six consortia, and close to that percentage or higher for the non-participant group in five consortia. There were exceptions to this pattern, wherein both groups of students in two consortia and non-participants in another consortium attended 4-year college more frequently than 2-year. Differences between the tech prep participants and non-participants emerged in college attendance in two consortia only. In one, participants were more likely than non-participants to attend 2-year college; in another, non-participants were more likely than participants to attend 4-year college.

Transcript analysis was conducted to determine whether tech prep participants attending the lead college in the consortium were continuing a tech prep program of study at the postsecondary level. Comparable definitions were established for continuing tech prep (CTP), taking into consideration unique features of each consortium's approach to tech prep and available documentation to make accurate identification. Results show differences among consortia in continuing tech prep participation, ranging from only 16.5% in one consortium to nearly 90% in another, with three consortia showing from 31% to 38% of their high school tech prep participant group continuing tech prep at the lead college. Of tech prep participants who transitioned to the lead college, typically over one-half continued to pursue a tech prep program of study, with participants in one consortium continuing at an astonishing rate of 95%.

Drawing upon college transcripts, placement test scores, and institutional policies on college placement for the career and transfer programs, we assessed how tech prep participants and non-participants performed on college placement tests in seven consortia, providing adequate information for our analysis. Using the local institutional standard for college placement in career programs (referred to as the *career standard*), results showed from 40% to nearly 80% of tech prep participants placed into college-level course work overall, with an even wider range for non-participants, of nearly 30% to 76%. Significant results were observed for the study groups in two consortia, with one favoring tech prep participants and the other non-participants.

Using the transfer standard set by each institution, the vast majority of students (tech prep and non-tech prep) were not placed into college-level studies. One consortium was an exception to this rule, but only slightly over half of both student groups were college ready. Group differences were noted in only one consortium, with non-participants more likely to have passed college placement tests than the tech prep participant group.

Looking at college placement in math, reading, and writing, math results paralleled overall placement results fairly closely. If students failed a placement test, it was most likely to have been because of difficulties with math, and this result was evident for both groups of students in all consortia, especially using the transfer standard. Using the career standard which is associated with tech prep programs, however, students were much more likely to be placed at the college level. From 50% to 94% of tech prep participants were placed into college-level math, compared to from 44% to 85% of non-participants. Results for reading and writing showed much higher incidence of college placement for both groups, with the majority of both groups placing at the college level in these subjects.

For those students who continue to the lead college, what are tech prep participants' experiences in college-level studies and outcomes, including enrollment, persistence, and completion of credentials?

Enrollment in the lead college in each consortium was very high, ranging from a median enrollment rate of 22% to 80%, with four consortia having an enrollment rate of 57% or 58%. Enrollment of tech prep participants exceeded non-participants in seven consortia, but several of these differences between groups were very small, with a significant difference evident in only two sites. Completion of a college degree (AA, AS, or AAS) or certificate was not a common occurrence for students in any consortium, regardless of tech prep status. The median percentage of students earning some credential was only 10.5%, after 3 or 4 years of high school graduation, for most students. Most consortia reported a modest range of completers at 8.5% to 11.7%. The proportions of participants and non-participants who completed a credential, who failed to complete but were still enrolled, and who failed to complete and were also no longer enrolled did not vary significantly for any site. Thus, comparing the study groups on the proportions of students completing a degree or certificate, continuing enrollment, or having ended enrollment at the lead college, we could find no differences.

The analysis also examined cumulative hours earned in non-developmental and developmental/remedial course work at the lead college or earned elsewhere and transferred, with results ranging from an average of 25 to a high of 34 cumulative hours, with the exception of one site showing 51 cumulative hours. Differences between groups were revealed in two consortia, where tech prep participants earned more college-level hours than did non-participants, and these results held after controlling for differences in panel affiliation with high school graduation in 1995, 1996, or 1997.

Our analysis also examined the proportion of hours earned at the lead college that was developmental/remedial, both cumulative and in the first term only, and the proportion of hours attempted that were earned. Results showed the median percentage of earned or completed hours that were remedial/developmental was 12.6 for the first term, and 9.6 for cumulative record, reflecting the tendency for the later terms to involve more college-level, and less remedial, course work. These results suggest the average proportion of completed semester hours that are remedial/developmental is not terribly high in most consortia. Moreover, students complete the majority of the remedial semesters they attempt, ranging from about two thirds to four fifths of the remedial semester hours taken. Some differences were found between the study groups in a few consortia, but the direction of differences was varied, sometimes favoring tech prep participants, and other times not. Combined with earlier findings on college placement, these findings also seem to suggest that students who place below college-level course work are not taking a substantial amount of remedial/development courses before moving into the collegiate level, but further analysis is needed to confirm this speculative conclusion.

Finally, the proportions of college-level hours attempted and earned at the lead college, both first term and cumulatively, showed a median percentage of 70.7% for cumulative, and 78.5% for first term. For first term, six consortia ranged from 66.5% to 83.7%, with one consortium higher at 88.8%, and the eighth lower at 66.5%. Differences were noted between the study groups in only two consortia, with one favoring tech prep participants. Overall, completion rates of remedial/developmental and college-level hours were similar, on the average, and the averages ranged from about two thirds to four fifths from site to site. Differences between participants and non-participants in completion rates were few, with no consistent tendency as to direction.

What are the work experiences of tech prep participants after high school graduation? How do tech prep participants work experiences compare to non-participants?

Most students held one to three jobs when surveyed about their employment status 1 to 3 years after high school graduation. About one third to one half of these were employed full time, with the remainder working part time. There was a tendency across sites for tech prep participants to be working full-time jobs more than the non-participant group, but this result reached significance in only one site. Most students held their present job for less than 2 years, and again group differences were not evident, except in one consortium where tech prep participants had held their present job longer than non-participants.

Usually students held unskilled or semi-skilled jobs (according to self-report on the follow-up survey) as their primary job, and differences were not evident between the study groups except in three consortia, where a higher percentage of tech prep participants held semi-skilled than unskilled jobs as compared to non-participants, suggesting tech prep participants were working in jobs requiring slightly higher skill levels than the comparison group. With respect to wages earned, tech prep participants tended to report higher hourly wages, but this result was significant in one consortium only. No differences were noted between groups in terms of satisfaction with job held or confidence in reaching the desired career goal. Overall, modest differences were noted between the study groups within some consortia in terms of employment status, job type, and wages earned, but differences found are noteworthy because they favor the tech prep participant group.

Implications for Policy and Practice

This last section of the report highlights implications for policy and practice that have emerged from this research. Again, the remarks parallel the research questions, first commenting on student characteristics; moving to secondary education and work during high school; transition from high school to college; college enrollment, persistence, and completion; and employment post-high-school.

First, students who participate in tech prep programs do not differ in substantial ways on race/ethnicity, income, and parental education from the students in the general student population who achieved similarly at high school graduation (refer to sampling in the Methods section of this report). Even so, family income and parental education was somewhat lower for tech prep participants and non-participants, suggesting some tech prep-students lack the cultural capital (Labaree, 1997) of other students. Also, participation in tech prep initiatives overall varied by gender in half the consortia, favoring participation by males in all cases. This difference appeared to be attributable to the collection of numerous tech prep programs within these consortia, many of which favored career preparation for students in historically male-dominated occupations.

Recognizing that tech prep programs require equal access by all students, including members of special populations, it is vitally important that local personnel continue to be diligent about insuring equitable gender and demographic representation among participants. Moreover, tech prep participants display some classic characteristics associated with at-risk behavior at the college level (see, for example, Tinto, 1996), which could jeopardize their ability to transition to or persist in college once enrolled there. For example, a sizeable proportion of tech prep participants appear to be first-generation college and, depending on location, a fairly large percentage come from low-income homes. These student characteristics are known widely to place students at risk of dropping out of college, increasing the importance of having local personnel pay very close attention to the school-to-college transition process for all students, particularly those likely to drop out.

Secondary education and tech prep participation varied widely from consortium to consortium, making it difficult to formulate definitive conclusions about any one model or approach to tech prep. Having offered this caveat, it does seem likely that school and consortium requirements influence student participation in core academic and CTE courses relative to tech prep programs of study. Minimum high school graduation requirements combined with tech prep core curriculum requirements (either commensurate with the basic diploma or associated with higher collegiate requirements) are influencing the course choices students are making during high school. Therefore, if schools do not define requirements for the tech prep core curriculum beyond the basic minimum, students do not tend to advance as far in the academic and/or CTE curriculum. However, if schools associate tech prep programs with more advanced requirements commensurate with high school diplomas associated with college entry, students may be more likely to engage in higher level course work. Indeed, a few consortia showed that tech prep participants need not be disadvantaged in fulfilling a college prep program of study if participating in intensive CTE course-taking for tech prep, and policies associated with these sites may be transportable to other schools. Undoubtedly, most, if not all, students are being urged to go further in the secondary academic curriculum than ever before because of on-going concerns about the quality of education. Because of this push, it is increasingly important that tech prep programs align with as rigorous a set of standards as possible, recognizing the dual purpose of serving the needs of the many diverse students in their regions.

Career-technical education course-taking appears to be enhanced by the tech prep model in most sites, if judged by the level of secondary enrollment in CTE courses, including articulated CTE courses, by tech prep participants. Some forms of work-based learning, such as co-op and job shadowing, are prominent among tech prep participants as well, suggesting students who engage in tech prep are likely to be involved in intensive learning experiences related to careers, both in the classroom and off campus. An association was also found between tech prep participation and service learning/community service, but favoring non-participants. The reason for this finding is unclear, but possibly tech prep-students have less time to devote to these activities than other students. Work during high school was prevalent for both groups, suggesting many students begin the balancing act of juggling time between school, work, and personal lives very early in their educational careers.

Recognizing that many students selected for this study would be labeled "non-college bound" by traditional academic standards, the proportion of the study groups going on to college at both the 2-year and 4-year levels is astounding. Results confirm earlier findings of Boesel and Fredland (1999) and many others, suggesting that "college for all" is nearly a universal phenomenon. Tech prep participants show a slight preference for attending 2-year colleges more than non-participants, but this is not surprising, given the focus of articulated course-taking that emphasizes sequenced course work extending from high school to community colleges. What may be more interesting is the incidence with which tech prep participants attend both 2-year and 4-year colleges, and 4-year only. Attendance at 4-year college is particularly evident among tech prep participants living in localities with plentiful higher education options, emphasizing the importance of building consortia that involve all higher education institutions that are most accessible to high school graduates in their region.

College enrollment among tech prep participants seems to involve a fairly substantial continuation of CTE course-taking, suggesting that if students finish a tech program in high school and enroll at the lead college within a few years, they are likely to continue enrollment in a tech prep-program at the postsecondary level. Though these results are somewhat speculative, they point to the importance of consortia encouraging high school tech prep participants to enroll in college and supporting them in efforts to continue their education in tech prep career paths. Once there, students are likely to continue the focus they developed in high school, but they probably need to be supported in pursuing consistent enrollment and credentials. Indeed, results suggest many students enroll at the college level, but very few enroll for sufficient hours to finish a certificate or degree—and this result is consistent for both study groups, across all sites.

Finally, the pattern of holding a job during high school extends to college for most students, plus some students made a deliberate choice to enter employment full-time without enrolling in college. For those students who do work after high school, full-time work in relatively unskilled, low-wage jobs is the predominant pattern. There is evidence, however, that tech prep participants in some consortia are advancing beyond this level of employment, suggesting potential benefits for tech prep participants who enter the labor market full-time soon after high school. A combination of factors may contribute to this phenomenon, including the relevance of tech prep training to semi-skilled or technical employment, but also because more participants than non-participants may spend a longer time with one employer, moving up from unskilled jobs obtained during high school to semi-skilled jobs after high school graduation. Together, these and other factors may contribute to positive economic outcomes for tech prep participants, but these suggestions are only speculative at this point. More research is needed to address these and other important questions raised by this study about the impact of tech prep on students' educational experiences and outcomes.

REFERENCES

Adelman, C. (1995). *The new college course map and transcript files: Changes in course-taking and achievement, 1972–1993.* Washington, DC: U.S. Department of Education.

Boesel, D., & Fredland, E. (1999). *College for all?* Washington, DC: National Library of Education, Office of Educational Research and Improvement.

Bragg, D. D. (2001b). *Promising outcomes for tech prep participants in eight local consortia: A summary of initial results.* St. Paul: National Research Center for Career and Technical Education, University of Minnesota.

Bragg, D. D. (2001a). Opportunities and challenges for the new vocationalism. In D. Bragg (Ed.), *The new vocationalism in community colleges*, (pp. 5–16). New Directions for Community Colleges, No. 115.

Bragg, D. D., Dare, D. A., Reger, W., Ovaice, G., Layton, J., Zamani, E., et al. (1999). *The community college and beyond: Implementation and preliminary outcomes of eight local tech prep/school-to-work consortia.* Berkeley, CA: National Center for Research in Vocational Education, University of California at Berkeley.

Bragg, D. D., Layton, J., & Hammons, F. (1994). *Tech prep implementation in the United States: Promising trends and lingering challenges,* (MDS–714). Berkeley: National Center for Research in Vocational Education, University of California.

Bragg, D., & Reger, W. (2002). *New lessons about tech prep implementation: Changes in Eight Selected Consortia Since Reauthorization of the Federal Tech Prep Legislation in 1998.* St. Paul: National Research Center for Career and Technical Education, University of Minnesota.

Chen, H. (1990). *Theory-driven evaluations.* Newbury Park, CA: Sage.

Cohen, A., & Brawer, F. (1996). *The American community college* (3rd ed.). San Francisco: Jossey-Bass.

Creswell, J. (1994). *Research design: Qualitative and quantitative approaches.* Beverly Hills, CA: Sage.

Elliott, B. (2000, October). *Tech Prep: Building a framework for future research, evaluation, and program practice* (Focus group report: prepared for OVAE/USDOE under ED contract number ED-99-CO-0160). Durham, NC: Research Triangle Institute.

Elmore, R. F. (2000, Winter). *Building a new structure for school leadership.* The Albert Shanker Institute.

Gifford, A., Hoachlander, E. G., & Tuma, J. (1989). *The secondary school taxonomy final report.* Berkeley, CA: MPR Associates.

Grubb, W. N. (1997). Not there yet: Prospects and problems for 'education through occupations.' *Journal of Vocational Education Research, 22,* 77–94.

Grubb, W. N., Badway, N., Bell, D., & Kraskouskas, E. (1996). *Community college innovations in workforce preparation curriculum integration and tech prep.* Mission Viejo, CA: League for Innovation in the Community College.

Hershey, A. M., Silverberg, M. K., Owens, T., & Hulsey, L. K. (1998). *Focus for the future: The final report of the national tech-prep evaluation.* Princeton, NJ: Mathematica Policy Research.

Houser, J. (1995). *Vocational education in the United States: The early 1990s* (NCES 95–024). Washington, DC: Office of Educational Research and Improvement, U.S. Department of Education.

Hughes, K., Bailey, T., & Mechur, M. (2001, February). *School to work: Making a difference.* New York: Institute on Education and the Economy, Teachers College, Columbia University.

Labaree, D. (1997). *How to succeed in school without really learning.* New Haven, CT: Yale University Press.

Levesque, K., Lauen, D., Teitelbaum, P., Alt, M., Librera, S., & Nelson, D. (2000). *Vocational education in the United States: Toward the year 2000.* Washington, DC: U.S. Department of Education, Office of Educational Research and Improvement.

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry.* Beverly Hills, CA: Sage.

National Association of Tech Prep Leadership. (1999, February). *Tech Prep Program Quality Indicators.*

Oakes, J. (1985). *Keeping track: How schools structure inequality.* New Haven, CT: Yale University Press.

Parnell, D. (1985). *The neglected majority.* Washington, DC: American Association of Community Colleges.

Parnell, D. (1994). The tech prep associate degree program revisited. In L. Falcone and R. Mundhenk (Eds.), *The tech prep associate degree challenge*, (pp. 43–50). Washington, DC: American Association of Community Colleges.

Pascarella, E., & Terenzini, P. (1991). *How college affects students.* San Francisco: Jossey-Bass.

Puckett, P. A., & Bragg, D. D. (2000). Counselor involvement in professional development and preparedness for roles in tech prep. *Journal of Vocational Education, 25*(3), 346–381.

Ruhland, S., & Timms, D. M. (2001). *Measuring tech prep excellence: A practitioner's guide to evaluation.* St. Paul: National Research Center for Career and Technical Education, University of Minnesota.

Tinto, V. (1996). *Persistence and the first-year experience at community college: Teaching new students to survive, stay, and thrive.* In J. Harkin (Ed.), The Community College: Opportunity and Access for America's First-Year Students (pp. 97–104). Columbia, SC: The National Resource Center for the Freshman Year Experience and Students in Transition, University of South Carolina.

Weiss, C. (1998). *Evaluation* (2nd ed.). Saddle River, NJ: Prentice Hall.

Wilms, P. (1977). *Learning to labour*. New York: Columbia University Press.

Worthen, B. R., Sanders, J. R., & Fitzpatrick, J. L. (1997). *Program evaluation: Alternative approaches and practical guidelines* (2nd ed.). New York: Longman.

Yoo, J. S. (2001). Relationship of tech prep participation and academic resources to college readiness at two selected tech prep consortia. Unpublished doctoral dissertation, University of Illinois at Urbana-Champaign.

Appendix A

High School Performance

(Quartile Rank and Cumulative GPA)

Table A1

High School Cumulative GPA by Tech Prep Status and Panel for East-Central Illinois (IL)

Variables	**Total**	**Tech prep**	**Non-tech prep**	**Tech prep by panel**		**Non-tech prep by panel**	
				'96	**'97**	**'96**	**'97**
High school GPA at graduation	*n* = 549	*n* = 292	*n* = 257	*n* = 130	*n* = 162	*n* = 114	*n* = 143
1.00 or less	8.6	9.6	7.4	18.5	2.5	16.7	0.0
1.01–1.50	1.6	2.1	1.2	1.5	2.5	0.0	2.1
1.51–2.00	11.7	12.7	10.5	11.5	13.6	7.9	12.6
2.01–2.50	25.0	25.0	24.9	21.5	27.8	24.6	25.2
2.51–3.00	24.4	24.7	24.1	18.5	29.6	23.7	24.5
3.01–3.50	18.8	17.5	20.2	20.8	14.8	18.4	21.7
3.51–4.00	10.0	8.6	11.7	7.7	9.3	8.8	14.0
				$\chi^2 = 28.77$, $df = 5$, $p < .001$		$\chi^2 = 28.18$, $df = 5$, $p < .001$	
		The *1.01–1.50* and *1.51–2.00* categories were combined for χ^2 analysis.					

Note. The 1995 and 1996 panels were combined due to the small sample for 1995. Source: institutional records and high school transcripts.

Table A2

High School Cumulative GPA for General Tech Prep Participants and Youth Apprentices by Panel for East-Central Illinois (IL)

Variables	Total	General tech prep	Tech prep/ youth appren-tices	General tech prep by panel		Tech prep/ youth apprentices by panel	
				'96	'97	'96	'97
High school GPA at graduation	n=292	n=255	n=37	n=110	n=145	n=20	n=17
1.00 or less	9.6	8.6	16.2	17.3	2.1	25.0	5.9
1.01 – 1.50	2.1	2.4	0.0	1.8	2.8	0.0	0.0
1.51 – 2.00	12.7	13.3	8.1	11.8	14.5	10.0	5.9
2.01 – 2.50	25.0	27.1	10.8	21.8	31.0	20.0	0.0
2.51 – 3.00	24.7	23.9	29.7	16.4	29.7	30.0	29.4
3.01 – 3.50	17.5	17.7	16.2	21.8	14.5	15.0	17.7
3.51 – 4.00	8.6	7.1	18.9	9.1	5.5	0.0	41.2
				$c^2 = 13.08$, *df* = 4, *p* = .011		$c^2 = 13.72$, *df* = 4, *p* = .008	
		The *1.00 or less*, *1.01–1.50*, and *1.51–2.00* categories were combined for c^2 analysis.					

Note. The 1995 and 1996 panels were combined due to the small sample for 1995. Source: institutional records and high school transcripts.

Table A3

High School Cumulative GPA by Tech Prep Status and Panel for Metro

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel '95	Tech prep by panel '96	Tech prep by panel '97	Non-tech prep by panel '95	Non-tech prep by panel '96	Non-tech prep by panel '97
High school GPA at graduation	$n = 624$	$n = 308$	$n = 316$	$n = 81$	$n = 94$	$n = 133$	$n = 103$	$n = 93$	$n = 120$
1.00 or below	6.9	7.1	6.7	17.3	1.1	5.3	6.8	8.6	5.0
2.01 – 2.50	1.1	0.7	1.6	0.0	1.1	0.8	1.0	0.0	3.3
2.51 – 3.00	42.5	41.9	43.0	40.7	45.7	39.9	48.5	45.2	36.7
3.01 – 3.50	47.4	48.7	46.2	40.7	52.1	51.1	42.7	40.9	53.3
3.51 – 4.00	2.1	1.6	2.5	1.2	0.0	3.0	1.0	5.4	1.7
				$\chi^2 = 9.96$, $df = 2$, $p = .007$					
				The GPA categories were combined to give three categories for χ^2 analysis: *1.00 or below*, *2.01–3.00*, and *3.01–4.00*. GPAs in the 1.00 range are missing, partly because of the conversion process from a 100-point scale to a 4.00-scale.					

Note. Source: institutional records and high school transcripts.

Table A4

High School Cumulative GPA by Tech Prep Status and Panel for Hillsborough (FL)

Variables	**Total**	**Tech prep**	**Non-tech prep**	**Tech prep by panel '95**	**'96**	**'97**	**Non-tech prep by panel '95**	**'96**	**'97**
High school GPA at graduation	*n* = 597	*n* = 301	*n* = 296	*n* = 47	*n* = 103	*n* = 151	*n* = 44	*n* = 104	*n* = 148
2.00 or below	2.5	3.3	1.7	6.4	1.0	4.0	0.0	2.9	1.4
2.01–2.50	4.2	4.3	4.1	2.1	4.9	4.6	2.3	6.7	2.7
2.51–3.00	45.9	41.5	50.3	38.3	49.5	37.1	45.5	47.1	54.1
3.01–3.50	40.2	44.2	36.2	44.7	40.8	46.4	34.1	38.5	35.1
3.51–4.00	7.2	6.6	7.8	8.5	3.9	8.0	18.2	4.8	6.8

Note. Source: institutional records and high school transcripts.

Table A5

High School Cumulative GPA by Tech Prep Status and Panel for Golden Crescent (TX)

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
				'95	'96	'97	'95	'96	'97
High school GPA at graduation	*n* = 583	*n* = 290	*n* = 283	*n* = 44	*n* = 106	*n* = 140	*n* = 44	*n* = 105	*n* = 136
Less than 2.00	3	5.1	5.6	10.2	3.8	4.3	8.5	5.7	4.4
2.01–2.50	11.3	10.5	12.9	6.1	14.2	9.3	8.5	15.2	12.5
2.51–3.00	11.5	12.9	11.8	20.4	7.6	14.3	10.6	9.5	14.0
3.01–3.50	30.1	41.7	43.1	34.7	42.5	43.6	42.6	45.7	41.2
3.51–4.00	13.3	29.8	26.7	28.6	32.1	28.6	29.8	23.8	27.9

Note. Source: institutional records and high school transcripts.

Table A6

High School Cumulative GPA by Tech Prep Status and Panel for Miami Valley (OH)

Variables	**Total**	**Tech prep**	**Non-tech prep**	**Tech prep by panel**		**Non-tech prep by panel**	
				'96	**'97**	**'96**	**'97**
High school GPA at graduation	$n = 347$	$n = 192$	$n = 155$	$n = 82$	$n = 110$	$n = 56$	$n = 99$
1.00 or less	27.4	20.3	36.1	30.5	12.7	44.6	31.3
1.01–1.50	0.6	1.0	0.0	1.2	0.9	0.0	0.0
1.51–2.00	6.1	10.4	0.7	12.2	9.1	0.0	1.0
2.01–2.50	16.7	17.7	15.5	12.2	21.8	10.7	18.2
2.51–3.00	23.1	18.2	29.0	18.3	18.2	30.4	28.3
3.01–3.50	18.2	18.8	17.4	13.4	22.7	10.7	21.2
3.51–4.00	8.1	13.5	1.3	12.2	14.6	3.6	0.0
		$\chi^2 = 35.47$, $df = 3$, $p < .001$		$\chi^2 = 12.33$, $df = 3$, $p = .006$			
		The *1.00 or less*, *1.01–1.50*, and *1.51–2.00* categories were combined, and the *3.01–3.50* and *3.51–4.00* categories were combined for χ^2 analysis.					

Note. Source: institutional records and high school transcripts.

Table A7

High School Cumulative GPA by Tech Prep Status and Panel for Mt. Hood (OR)

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
				’95	’96	’97	’95	’96	’97
High school GPA at graduation	*n* = 489	*n* = 251	*n* = 238	*n* = 57	*n* = 95	*n* = 99	*n* = 60	*n* = 84	*n* = 94
1.00 or less	1.4	1.6	1.3	0.0	2.1	2.0	0.0	1.2	2.1
1.01–1.50	2.9	3.6	2.1	3.5	3.2	4.0	1.7	2.4	2.1
1.51–2.00	15.3	16.3	14.3	22.8	12.6	16.2	13.3	14.3	14.9
2.01–2.50	25.2	24.3	26.1	26.3	28.4	19.2	31.7	21.4	26.6
2.51–3.00	28.8	28.3	29.4	28.1	27.4	29.3	35.0	31.0	24.5
3.01–3.50	17.4	17.5	17.2	12.3	17.9	20.2	11.7	20.2	18.1
3.51–4.00	9.0	8.4	9.7	7.0	8.4	9.1	6.7	9.5	11.7

Note. Source: institutional records and high school transcripts.

Table A8

High School Cumulative GPA by Tech Prep Status and Panel for Guilford County (NC)

				Tech prep by panel			Non-tech prep by panel		
Variables	**Total**	**Tech prep**	**Non-tech prep**	**'96**	**'97**	**'98**	**'96**	**'97**	**'98**
High school GPA at graduation	$n = 723$	$n = 412$	$n = 311$	$n = 99$	$n = 135$	$n = 178$	$n = 99$	$n = 127$	$n = 85$
1.01–1.50	0.7	1.2	0.0	0.0	0.0	2.8	0.0	0.0	0.0
1.51–2.00	7.1	6.6	7.7	6.1	2.2	10.1	7.1	1.6	17.7
2.01–2.50	34.9	33.3	37.0	37.4	34.1	30.3	43.4	37.0	29.4
2.51–3.00	36.0	35.7	36.3	36.4	39.3	32.6	32.3	41.7	32.9
3.01–3.50	17.6	18.5	16.4	14.1	19.3	20.2	14.1	17.3	17.7
3.51–4.00	3.9	4.9	2.6	6.1	5.2	3.9	3.0	2.4	2.4
				$\chi^2 = 14.31$, $df = 6$, $p = .026$			$\chi^2 = 21.53$, $df = 6$, $p = .002$		
				For χ^2 analysis, the lowest GPA categories were combined to give a single *2.00 or below* category, and the top two GPA categories were combined to give a single *3.01–4.00* category.					

Note. The 1996 and 1997 panels were combined for this analysis. Source: institutional records and high school transcripts.

Table A9

High School Cumulative GPA for General Tech Prep Participants and Youth Apprentices by Panel for Guilford County (NC)

Variables	Total	General tech prep	Tech prep/ youth appren- tices	General tech prep by panel			Tech prep/youth apprentices by panel		
				'96	'97	'98	'96	'97	'98
High school GPA at graduation	*n* = 412	*n* = 373	*n* = 39	*n* = 97	*n* = 116	*n* = 160	*n* = 2	*n* = 19	*n* = 18
1.01–1.50	1.2	1.3	0.0	0.0	0.0	3.1	0.0	0.0	0.0
1.51–2.00	6.6	7.0	2.6	6.2	1.7	11.3	0.0	5.3	0.0
2.01–2.50	33.3	34.1	25.6	38.1	35.3	30.6	0.0	26.3	27.8
2.51–3.00	35.7	35.7	35.9	37.1	37.9	33.1	0.0	47.4	27.8
3.01–3.50	18.4	17.2	30.8	12.4	20.7	17.5	100.0	10.5	44.4
3.51–4.00	4.9	4.8	5.1	6.2	4.3	4.4	0.0	10.5	0.0
				$\chi^2 = 19.80$, $df = 10$, $p = .031$					
				For χ^2 analysis, the lowest GPA categories were combined to give a single *2.00 or below* category, and the top two GPA categories were combined to give a single *3.01–4.00* category.					

Note. Source: institutional records and high school transcripts.

Table A10

High School Cumulative GPA by Tech Prep Status and Panel for San Mateo (CA)

Variables	**Total**	**Tech prep**	**Non-tech prep**	**Tech prep by panel**			**Non-tech prep by panel**		
				'95	**'96**	**'97**	**'95**	**'96**	**'97**
High school GPA at graduation	*n* = 622	*n* = 314	*n* = 308	*n* = 76	*n* = 119	*n* = 119	*n* = 75	*n* = 116	*n* = 117
1.00 or less	0.6	0.3	1.0	0.0	0.8	0.0	2.7	0.0	0.9
1.01–1.50	0.3	0.3	0.3	1.3	0.0	0.0	1.3	0.0	0.0
1.51–2.00	3.4	3.5	3.3	2.6	5.0	2.5	2.7	4.3	2.6
2.01–2.50	19.9	20.1	19.8	19.7	23.5	16.8	18.7	24.1	16.2
2.51–3.00	25.9	26.1	25.7	38.2	16.8	27.7	37.3	16.4	27.4
3.01–3.50	28.1	28.0	28.3	27.6	27.7	28.6	26.7	27.6	29.9
3.51–4.00	21.7	21.7	21.8	10.5	26.1	24.4	10.7	27.6	23.1

Note. Source: institutional records and high school transcripts.

Appendix B

Demographics and Background Characteristics

Table B1

Demographics of Study Participants by Tech Prep Status and Panel for East-Central Illinois (IL)

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel		Non-tech prep by panel	
				'96	'97	'96	'97
Gender	*n* = 544	*n* = 289	*n* = 255	*n* = 129	*n* = 160	*n* = 113	*n* = 142
Male	52.2	57.1	46.7	62.0	53.1	43.4	49.3
Female	47.8	42.9	53.3	38.0	46.9	56.6	50.7
		$\chi^2 = 5.903$, $df = 1$, $p = .015$					
Race/ethnicity	*n* = 444	*n* = 240	*n* = 204	*n* = 105	*n* = 135	*n* = 88	*n* = 116
Asian	0.2	0.0	0.5	0.0	0.0	0.0	0.9
Black	6.5	6.3	6.9	3.8	8.2	5.7	7.8
Hispanic	3.4	2.9	3.9	3.8	2.2	1.1	6.0
Native American/ Alaska Native	0.2	0.4	0.0	0.0	0.7	0.0	0.0
Other	1.1	1.3	1.0	1.0	1.5	0.0	1.7
White	88.5	89.2	87.8	91.4	87.4	93.2	83.6
Marital status	*n* = 341	*n* = 183	*n* = 158	*n* = 85	*n* = 98	*n* = 65	*n* = 93
Single	87.1	85.8	88.6	87.1	84.7	86.2	90.3
Single with children	7.0	7.1	7.0	7.1	7.1	4.6	8.6
Married	3.2	2.7	3.8	1.2	4.1	7.7	1.1
Married with children	2.6	4.4	0.6	4.7	4.1	1.5	0.0
Father's education level	*n* = 322	*n* = 171	*n* = 151	*n* = 80	*n* = 91	*n* = 62	*n* = 89
Less than HS graduate	9.0	8.2	9.9	8.8	7.7	12.9	7.9
HS graduate	39.1	42.1	35.8	36.3	47.2	35.5	36.0
College, no degree	24.2	23.4	25.2	26.3	20.9	29.0	22.5
2-year associate's degree	13.0	14.0	11.9	17.5	11.0	14.5	10.1
4-year bachelor's degree	12.1	11.1	13.2	10.0	12.1	6.5	18.0
Graduate degree	2.5	1.2	4.0	1.3	1.1	1.6	5.6

Table B1 (continued)

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel		Non-tech prep by panel	
				'96	'97	'96	'97
Mother's education level	$n = 330$	$n = 177$	$n = 153$	$n = 82$	$n = 95$	$n = 62$	$n = 91$
Less than HS graduate	5.2	5.6	4.6	7.3	4.2	4.8	4.4
HS graduate	38.2	41.2	34.6	41.5	41.1	32.3	36.3
College, no degree	21.2	18.6	24.2	18.3	18.9	35.5	16.5
2-year associate's degree	17.0	16.9	17.0	14.6	18.9	12.9	19.8
4-year bachelor's degree	13.9	11.9	16.3	12.2	11.6	12.9	18.7
Graduate degree	4.5	5.6	3.3	6.1	5.3	1.6	4.4
Family income	$n = 270$	$n = 139$	$n = 131$	$n = 66$	$n = 73$	$n = 54$	$n = 77$
$14,999 or less	6.3	6.5	6.1	6.1	6.8	7.4	5.2
$15,000–$29,999	16.7	20.9	12.2	19.7	21.9	13.0	11.7
$30,000–$44,999	28.5	29.5	27.5	33.3	26.0	31.5	24.7
$45,000–$59,999	23.3	21.6	25.2	16.7	26.0	22.2	27.3
$60,000–$74,999	12.6	13.0	12.2	13.6	12.3	16.7	9.1
$75,000–$89,999	8.1	6.5	9.9	9.1	4.1	7.4	11.7
$90,000 or more	4.4	2.2	6.9	1.5	2.7	1.8	10.4
Present residence	$n = 337$	$n = 183$	$n = 154$	$n = 85$	$n = 98$	$n = 63$	$n = 91$
Live with my parent(s)	66.5	66.1	66.9	57.7	73.5	60.3	71.4
Live alone	10.4	12.6	7.8	18.8	7.1	7.9	7.7
Live with spouse or significant other	9.5	10.4	8.4	8.2	12.2	14.3	4.4
Live with a friend or roommate	13.6	10.9	16.9	15.3	7.1	17.5	16.5
				$\chi^2 = 10.14$, $df = 3$, $p = .017$			
Utility of high school education	$n = 341$	$n = 183$	$n = 158$	$n = 84$	$n = 99$	$n = 65$	$n = 93$
Not at all	6.2	6.6	5.7	11.9	2.0	6.2	5.4
Somewhat	23.8	21.3	26.6	13.1	28.3	27.7	25.8
Fairly	40.5	39.3	41.8	45.2	34.3	35.4	46.2
Very	25.5	30.6	19.6	28.6	32.3	24.6	16.1
Extremely	4.1	2.2	6.3	1.2	3.0	6.2	6.5

Note. Source: 1998 Education-To-Careers Follow-Up Survey and high school transcripts.

Table B2

Demographics of General Tech Prep Participants and Youth Apprentices for East-Central Illinois (IL)

Variables	Total	General tech prep	Tech prep/ youth appren-tices	General tech prep by panel		Tech prep/ youth apprentices by panel	
				'96	'97	'96	'97
Gender	$n = 289$	$n = 252$	$n = 37$	$n = 109$	$n = 143$	$n = 20$	$n = 17$
Male	57.1	53.2	83.8	56.0	51.1	95.0	70.6
Female	42.9	46.8	16.2	44.0	49.0	5.0	29.4
		$\chi^2 = 12.34$, $df = 1$, $p < .001$				$\chi^2 = 4.03$, $df = 1$, $p < .05$	
Race/ethnicity	$n = 240$	$n = 208$	$n = 32$	$n = 89$	$n = 119$	$n = 16$	$n = 16$
Asian	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Black	6.3	5.8	9.4	2.3	8.4	12.5	6.3
Hispanic	2.9	1.9	9.4	2.3	1.7	12.5	6.3
Native American/ Alaska Native	0.4	0.5	0.0	0.0	0.8	0.0	0.0
Other	1.2	1.4	0.0	1.1	1.7	0.0	0.0
White	89.2	90.4	81.3	94.4	87.4	75.0	87.5
Marital status	$n = 183$	$n = 153$	$n = 30$	$n = 70$	$n = 83$	$n = 15$	$n = 15$
Single	85.8	85.0	90.0	85.7	84.3	93.3	86.7
Single with children	7.1	7.8	3.3	8.6	7.2	0.0	6.7
Married	2.7	3.3	0.0	1.4	4.8	0.0	0.0
Married with children	4.4	3.9	6.7	4.3	3.6	6.7	6.7
Father's education level	$n = 171$	$n = 142$	$n = 29$	$n = 65$	$n = 77$	$n = 15$	$n = 14$
Less than HS graduate	8.2	8.5	6.9	9.2	7.8	6.7	7.1
HS graduate	42.1	40.8	48.3	32.3	48.1	53.3	42.9
College, no degree	23.4	23.2	24.1	30.8	16.9	6.7	42.9
2-year associate's degree	14.0	14.1	13.8	16.9	11.7	20.0	7.1
4-year bachelor's degree	11.1	12.0	6.9	9.2	14.3	13.3	0.0
Graduate degree	1.2	1.4	0.0	1.5	1.3	0.0	0.0

Table B2 (continued)

Variables	**Total**	**General tech prep**	**Tech prep/ youth appren-tices**	**General tech prep by panel**		**Tech prep/ youth apprentices by panel**	
				'96	**'97**	**'96**	**'97**
Mother's education level	*n* = 177	*n* = 147	*n* = 30	*n* = 67	*n* = 80	*n* = 15	*n* = 15
Less than HS graduate	5.7	4.8	10.0	7.5	2.5	6.7	13.3
HS graduate	41.2	45.6	20.0	46.3	45.0	20.0	20.0
College, no degree	18.6	17.0	26.7	14.9	18.7	33.3	20.0
2-year associate's degree	17.0	18.4	10.0	16.4	20.0	6.7	13.3
4-year bachelor's degree	11.9	10.2	20.0	10.4	10.0	20.0	20.0
Graduate degree	5.6	4.1	13.3	4.5	3.7	13.3	13.3
		$\chi^2 = 9.64$, $df = 3$, $p = .022$					
		Less than HS graduate and *HS graduate* categories were combined, and *4-year bachelor's degree* and *Graduate degree* categories were combined for χ^2 analysis.					
Family income	*n* = 139	*n* = 113	*n* = 26	*n* = 52	*n* = 61	*n* = 14	*n* = 12
$14,999 or less	6.5	6.2	7.7	5.8	6.6	7.1	8.3
$15,000–$29,999	20.9	23.9	7.7	23.1	24.6	7.1	8.3
$30,000–$44,999	29.5	27.4	38.5	26.9	27.9	57.1	16.7
$45,000–$59,999	21.6	20.3	26.9	17.3	23.0	14.3	41.7
$60,000–$74,999	12.9	13.3	11.5	15.4	11.5	7.1	16.7
$75,000–$89,999	6.5	7.1	3.8	9.6	4.9	7.1	0.0
$90,000 or more	2.2	1.8	3.8	1.9	1.6	0.0	8.3
Present residence	*n* = 184	*n* = 154	*n* = 30	*n* = 70	*n* = 84	*n* = 15	*n* = 14
Live with my parent(s)	65.8	67.5	56.7	58.6	75.0	53.3	64.3
Live alone	12.5	11.7	16.7	20.0	4.8	13.3	21.4
Live with spouse or significant other	10.3	11.0	6.7	8.6	13.1	6.7	7.1
Live with a friend or roommate	10.9	9.7	16.7	12.9	7.1	26.7	7.1
				$\chi^2 = 11.1$, $df = 3$, $p = .011$			
Utility of high school education	*n* = 183	*n* = 153	*n* = 30	*n* = 69	*n* = 84	*n* = 15	*n* = 15
Not at all	6.6	5.2	13.3	8.7	2.4	26.7	0.0
Somewhat	21.3	22.2	16.7	14.5	28.6	6.7	26.7
Fairly	39.3	37.3	50.0	42.0	33.3	60.0	40.0
Very	30.6	32.7	20.0	33.3	32.1	6.7	33.3
Extremely	2.2	2.6	0.0	1.5	3.6	0.0	0.0

Note. Source: 1998 Education-To-Careers Follow-Up Survey and high school transcripts.

Table B3

Demographics of Study Participants by Tech Prep Status and Panel for Metro

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
				'95	'96	'97	'95	'96	'97
Gender	$n = 624$	$n = 308$	$n = 316$	$n = 81$	$n = 94$	$n = 133$	$n = 103$	$n = 93$	$n = 120$
Male	46.2	51.3	41.1	55.6	61.7	41.4	45.6	51.6	29.2
Female	53.8	48.7	58.9	44.4	38.3	58.7	54.4	48.4	70.8
		$\chi^2 = 6.48$, $df = 1$, $p = .011$		$\chi^2 = 9.27$, $df = 1$, $p = .002$			$\chi^2 = 11.45$, $df = 1$, $p < .001$		
Race/ethnicity	$n = 272$	$n = 131$	$n = 141$	$n = 27$	$n = 35$	$n = 69$	$n = 40$	$n = 42$	$n = 59$
Asian	2.2	3.1	1.4	0.0	5.7	2.9	0.0	4.8	0.0
Black	61.0	54.2	67.4	63.0	48.6	53.6	77.5	69.1	59.3
Hispanic	17.3	16.0	18.4	11.1	20.0	15.9	10.0	16.7	25.4
Native American/ Alaska Native	0.4	0.8	0.0	14.8	8.6	11.6	0.0	0.0	0.0
Other	8.8	11.5	6.4	14.8	8.6	11.6	7.5	7.1	5.1
White	10.3	14.5	6.4	11.1	17.1	14.5	5.0	2.4	10.2
		$\chi^2 = 9.83$, $df = 3$, $p = .02$							
		Asian, *Native American*, and *Other* categories were combined for χ^2 analysis.							
Marital status	$n = 278$	$n = 136$	$n = 142$	$n = 28$	$n = 36$	$n = 72$	$n = 40$	$n = 42$	$n = 60$
Single	88.5	87.5	89.4	78.6	91.7	88.9	77.5	90.5	96.7
Single with children	7.6	8.8	6.3	14.3	5.6	8.3	12.5	9.5	0.0
Married	1.1	0.7	1.4	3.6	0.0	0.0	5.0	0.0	0.0
Married with children	2.9	2.9	2.8	3.6	2.8	2.8	5.0	0.0	3.3
Father's education level	$n = 204$	$n = 102$	$n = 102$	$n = 24$	$n = 27$	$n = 51$	$n = 28$	$n = 31$	$n = 43$
Less than HS graduate	17.2	13.7	20.6	16.7	3.7	17.7	17.9	22.6	20.9
HS graduate	42.2	44.1	40.2	37.5	59.3	39.2	46.4	45.2	32.6
College, no degree	14.7	12.8	16.7	4.2	11.1	17.7	14.3	12.9	20.9
2-year associate's degree	10.8	11.8	9.8	16.7	11.1	9.8	7.1	9.7	11.6
4-year bachelor's degree	11.8	12.8	10.8	12.5	14.8	11.8	14.3	6.5	11.6
Graduate degree	3.4	4.9	2.0	12.5	0.0	3.9	0.0	3.2	2.3

Table B3 (continued)

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
				'95	'96	'97	'95	'96	'97
Mother's education level	*n* = 246	*n* = 123	*n* = 123	*n* = 26	*n* = 32	*n* = 65	*n* = 35	*n* = 37	*n* = 51
Less than HS graduate	19.5	21.1	17.9	19.2	15.6	24.6	22.9	16.2	15.7
HS graduate	35.4	30.1	40.7	30.8	40.6	24.6	37.1	46.0	39.2
College, no degree	19.1	17.9	20.3	15.4	21.9	16.9	17.1	27.0	17.7
2-year associate's degree	13.0	14.6	11.4	15.4	6.3	18.5	5.7	2.7	21.6
4-year bachelor's degree	7.7	9.8	5.7	15.4	3.1	10.8	11.4	5.4	2.0
Graduate degree	5.3	6.5	4.1	3.9	12.5	4.6	5.7	2.7	3.9
							$\chi^2 = 9.79$, $df = 3$, $p = .021$		
				Less than HS graduate and *HS graduate* categories were combined, and *4-year bachelor's degree* and *Graduate degree* categories were combined for χ^2 analysis.					
Family income	*n* = 216	*n* = 104	*n* = 112	*n* = 18	*n* = 31	*n* = 55	*n* = 32	*n* = 36	*n* = 44
$14,999 or less	25.0	27.9	22.3	11.1	35.5	29.1	25.0	25.0	18.2
$15,000–$29,999	34.3	30.8	37.5	44.4	29.0	27.3	25.0	38.9	45.5
$30,000–$44,999	23.1	20.2	25.9	27.8	9.7	23.6	25.0	30.6	22.7
$45,000–$59,999	7.4	9.6	5.4	5.6	6.5	12.7	9.4	2.8	4.6
$60,000–$74,999	5.6	5.8	5.4	11.1	9.7	1.8	9.4	0.0	6.8
$75,000–$89,999	3.7	3.9	3.6	0.0	6.5	3.6	6.3	2.8	2.3
$90,000 or more	0.9	1.9	0.0	0.0	3.2	1.8	0.0	0.0	0.0
Present residence	*n* = 271	*n* = 134	*n* = 137	*n* = 27	*n* = 36	*n* = 71	*n* = 39	*n* = 41	*n* = 57
Live with my parent(s)	80.4	76.9	83.9	70.4	77.8	78.9	66.7	85.4	94.7
Live alone	7.7	9.7	5.8	11.1	11.1	8.4	15.4	4.9	0.0
Live with spouse or significant other	5.5	5.2	5.8	11.1	2.8	4.2	12.8	2.4	3.5
Live with a friend or roommate	6.3	8.2	4.4	7.4	8.3	8.4	5.1	7.3	1.8
							$\chi^2 = 8.44$, $df = 1$, $p = .004$		
				Live alone, *Live with spouse/SO*, and *Live with friend/roommate* categories were combined for χ^2 analysis.					
Utility of high school education	*n* = 276	*n* = 135	*n* = 141	*n* = 28	*n* = 36	*n* = 71	*n* = 40	*n* = 42	*n* = 59
Not at all	7.4	12.6	8.5	7.1	8.3	16.9	7.5	11.9	6.8
Somewhat	20.0	30.4	34.8	35.7	27.8	29.6	42.5	23.8	37.3
Fairly	22.5	36.3	31.9	35.7	38.9	35.2	30.0	31.0	33.9
Very	11.1	17.0	18.4	14.3	19.4	16.9	17.5	21.4	17.0
Extremely	2.8	3.7	6.4	7.1	5.6	1.4	2.5	11.9	5.1

Note. 1995 and 1996 panels were combined for this analysis. Source: 1998 Education-To-Careers Follow-Up Survey and high school transcripts.

Table B4

Demographics of Study Participants by Tech Prep Status and Panel for Hillsborough (FL)

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
				'95	'96	'97	'95	'96	'97
Gender	*n* = 597	*n* = 301	*n* = 296	*n* = 47	*n* = 103	*n* = 151	*n* = 44	*n* = 104	*n* = 148
Male	48.1	46.2	50.0	42.6	44.7	48.3	40.9	55.8	48.7
Female	51.9	53.8	50.0	57.5	55.3	51.7	59.1	44.2	51.4
Race/ethnicity	*n* = 597	*n* = 301	*n* = 296	*n* = 47	*n* = 103	*n* = 151	*n* = 44	*n* = 104	*n* = 148
Asian	3.5	3.3	3.7	2.1	5.8	2.0	0.0	4.8	4.1
Black	13.9	15.6	12.2	21.3	15.5	13.9	9.1	11.5	13.5
Hispanic	16.6	17.6	15.5	21.3	19.4	15.2	20.5	15.4	14.2
Native American/ Alaska Native	0.5	1.0	0.0	2.1	0.0	1.3	0.0	0.0	0.0
Other	1.0	1.3	0.7	0.0	1.0	2.0	0.0	1.0	0.7
White		61.1	67.9	53.2	58.3	65.6	70.5	67.3	67.6
Marital status	*n* = 268	*n* = 129	*n* = 139	*n* = 16	*n* = 38	*n* = 75	*n* = 16	*n* = 49	*n* = 74
Single	88.8	84.5	92.8	87.5	81.6	85.3	81.3	91.8	96.0
Single with children	3.4	4.7	2.2	6.3	2.6	4.0	6.3	2.0	1.4
Married	5.2	7.0	3.6	0.0	10.5	6.7	12.5	4.1	1.4
Married with children	2.6	3.9	1.4	6.3	5.3	4.0	0.0	2.0	1.4
Father's education level	*n* = 249	*n* = 118	*n* = 131	*n* = 13	*n* = 34	*n* = 71	*n* = 16	*n* = 47	*n* = 68
Less than HS graduate	12.4	13.6	11.5	7.7	8.8	16.9	12.5	12.8	10.3
HS graduate	32.5	39.0	26.7	46.2	38.2	38.0	37.5	31.9	20.6
College, no degree	21.7	22.0	21.4	23.1	32.4	16.9	6.3	14.9	29.4
2-year associate's degree	7.2	10.2	4.6	7.7	8.8	11.3	0.0	10.6	1.5
4-year bachelor's degree	19.3	12.7	25.2	15.4	11.8	12.7	31.3	25.5	23.5
Graduate degree	6.8	2.5	10.7	0.0	0.0	4.2	12.5	4.3	14.7
		$\chi^2 = 15.9$, $df = 4$, $p = .003$					$\chi^2 = 9.631$, $df = 4$, $p = .047$		
		4-year bachelor's degree and *Graduate degree* categories were combined for χ^2 analysis.							

Table B4 (continued)

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
				'95	'96	'97	'95	'96	'97
Mother's education level	*n* = 262	*n* = 128	*n* = 134	*n* = 16	*n* = 38	*n* = 74	*n* = 16	*n* = 47	*n* = 71
Less than HS graduate	10.7	11.7	9.7	12.5	10.5	12.2	12.5	2.6	5.4
HS graduate	37.0	40.6	33.6	62.5	26.3	43.2	50.0	27.7	33.8
College, no degree	21.4	22.7	20.2	6.3	31.6	21.6	12.5	23.4	19.7
2-year associate's degree	11.5	12.5	10.5	6.3	18.4	10.8	6.3	10.6	11.3
4-year bachelor's degree	13.0	7.0	18.7	0.0	10.5	6.8	25.0	19.2	16.9
Graduate degree	6.5	5.5	7.5	12.5	2.6	5.4	6.3	6.4	8.5
Family income	*n* = 216	*n* = 102	*n* = 114	*n* = 14	*n* = 30	*n* = 58	*n* = 16	*n* = 40	*n* = 58
$14,999 or less	9.7	13.7	6.1	14.3	10.0	15.5	0.0	12.5	3.5
$15,000–$29,999	18.5	21.6	15.8	21.4	33.3	15.5	18.8	10.0	19.0
$30,000–$44,999	23.1	21.6	24.6	21.4	23.3	20.7	18.8	32.5	20.7
$45,000–$59,999	19.9	21.6	18.4	14.3	23.3	22.4	31.3	12.5	19.0
$60,000–$74,999	11.1	5.9	15.8	7.1	3.3	6.9	18.8	15.0	15.5
$75,000–$89,999	6.0	7.8	4.4	7.1	0.0	12.1	0.0	7.5	3.5
$90,000 or more	11.6	7.8	14.9	14.3	6.7	6.9	12.5	10.0	19.0
Present residence	*n* = 263	*n* = 126	*n* = 137	*n* = 16	*n* = 37	*n* = 73	*n* = 16	*n* = 49	*n* = 72
Live with my parent(s)	66.9	65.9	67.9	68.8	54.1	71.2	56.3	67.4	70.8
Live alone	5.7	7.1	4.4	18.8	5.4	5.5	6.3	6.1	2.8
Live with spouse or significant other	10.6	13.5	8.0	6.3	27.0	8.2	18.8	8.2	5.6
Live with a friend or roommate	16.7	13.5	19.7	6.3	13.5	15.1	18.8	18.4	20.8
Utility of high school education	*n* = 268	*n* = 127	*n* = 141	*n* = 15	*n* = 37	*n* = 75	*n* = 16	*n* = 50	*n* = 75
Not at all	10.4	18.1	12.1	13.3	21.6	17.3	25.0	10.0	10.7
Somewhat	15.4	24.4	24.8	26.7	21.6	25.3	6.3	34.0	22.7
Fairly	22.1	33.1	41.8	20.0	32.4	36.0	43.8	40.0	42.7
Very	12.9	21.3	18.4	40.0	21.6	17.3	25.0	12.0	21.3
Extremely	1.9	3.2	2.8	0.0	2.7	4.0	0.0	4.0	2.7

Note. 1995 and 1996 panels were combined for this analysis. Source: 1998 Education-To-Careers Follow-Up Survey and high school transcripts.

Table B5

Demographics of Study Participants by Tech Prep Status and Panel for Golden Crescent (TX)

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel '95	Tech prep by panel '96	Tech prep by panel '97	Non-tech prep by panel '95	Non-tech prep by panel '96	Non-tech prep by panel '97
Gender	*n* = 584	*n* = 294	*n* = 290	*n* = 49	*n* = 106	*n* = 139	*n* = 47	*n* = 105	*n* = 138
Male	47.9	45.2	50.7	38.8	44.3	48.2	46.8	52.4	50.7
Female	52.1	54.8	49.3	61.2	55.7	51.8	53.2	47.6	49.3
Race/ethnicity	*n* = 576	*n* = 288	*n* = 288	*n* = 48	*n* = 102	*n* = 138	*n* = 47	*n* = 104	*n* = 137
Asian	0.5	0.4	0.7	2.1	0.0	0.0	0.0	1.9	0.0
Black	9.4	9.4	9.4	10.4	11.8	7.3	8.5	9.6	9.5
Hispanic	31.3	33.7	28.8	27.1	39.2	31.9	27.7	38.5	21.9
Other	0.2	0.4	0.0	0.0	0.0	0.7	0.0	0.0	0.0
White	58.7	56.3	61.1	60.4	49.0	60.1	63.8	50.0	68.6
							$\chi^2 = 8.57$, $df = 3$, $p = .036$		
				Asian, *Black*, and *Other* categories were combined for χ^2 analysis.					
Marital status	*n* = 222	*n* = 129	*n* = 93	*n* = 18	*n* = 42	*n* = 69	*n* = 12	*n* = 30	*n* = 51
Single	85.6	86.1	85.0	77.8	85.7	88.4	91.7	80.0	86.3
Single with children	5.9	5.4	6.5	5.6	4.8	5.8	0.0	6.7	7.8
Married	2.3	3.1	1.1	5.6	4.8	1.5	0.0	3.3	0.0
Married with children	6.3	5.4	7.5	11.1	4.8	4.4	8.3	10.0	5.9
Father's education level	*n* = 210	*n* = 122	*n* = 88	*n* = 17	*n* = 39	*n* = 66	*n* = 11	*n* = 27	*n* = 50
Less than HS graduate	16.7	16.4	17.1	5.9	15.4	19.7	27.3	25.9	10.0
HS graduate	31.9	32.8	30.7	29.4	33.3	33.3	27.3	37.0	28.0
College, no degree	30.0	32.0	27.3	52.9	25.6	30.3	18.2	7.4	40.0
2-year associate's degree	7.6	7.4	8.0	0.0	10.3	7.6	27.3	3.7	6.0
4-year bachelor's degree	9.5	9.8	9.1	11.8	12.8	7.6	0.0	7.4	12.0
Graduate degree	4.3	1.6	8.0	0.0	2.6	1.5	0.0	18.5	4.0
							$\chi^2 = 11.15$, $df = 4$, $p = .025$		
				4-ytear bachelor's degree and *Graduate degree* categories were combined for χ^2 analysis.					

Table B5 (continued)

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel '95	Tech prep by panel '96	Tech prep by panel '97	Non-tech prep by panel '95	Non-tech prep by panel '96	Non-tech prep by panel '97
Mother's education level	*n* = 216	*n* = 127	*n* = 89	*n* = 18	*n* = 40	*n* = 69	*n* = 12	*n* = 26	*n* = 51
Less than HS graduate	14.8	15.8	13.5	16.7	15.0	15.9	8.3	19.2	11.8
HS graduate	25.9	26.8	24.7	22.2	45.0	17.4	33.3	15.4	27.5
College, no degree	30.6	33.1	27.0	16.7	25.0	42.0	25.0	26.9	27.5
2-year associate's degree	13.4	15.0	11.2	33.3	10.0	13.0	16.7	11.5	9.8
4-year bachelor's degree	10.6	6.3	16.9	5.6	2.5	8.7	16.7	15.4	17.7
Graduate degree	4.6	3.2	6.7	5.6	2.5	2.9	0.0	11.5	5.9
				$\chi^2 = 9.74$, *df* = 4, $p < .05$ *4-year bachelor's degree* and *Graduate degree* categories were combined for χ^2 analysis.					
Family income	*n* = 191	*n* = 115	*n* = 76	*n* = 18	*n* = 37	*n* = 60	*n* = 11	*n* = 24	*n* = 41
$14,999 or less	9.9	10.4	9.2	5.6	10.8	11.7	18.2	4.2	9.8
$15,000–$29,999	20.4	17.4	25.0	22.2	16.2	16.7	36.4	37.5	14.6
$30,000–$44,999	21.5	20.9	22.4	22.2	21.6	20.0	0.0	20.8	29.3
$45,000–$59,999	26.2	27.0	25.0	33.3	24.3	26.7	27.3	20.8	26.8
$60,000–$74,999	13.1	15.7	9.2	5.6	18.9	16.7	0.0	12.5	9.8
$75,000–$89,999	5.2	7.0	2.6	11.1	8.1	5.0	0.0	0.0	4.9
$90,000 or more	3.7	1.7	6.6	0.0	0.0	3.3	18.2	4.2	4.9
Present residence	*n* = 209	*n* = 122	*n* = 87	*n* = 16	*n* = 41	*n* = 65	*n* = 10	*n* = 30	*n* = 47
Live with my parent(s)	56.5	59.0	52.9	37.5	58.5	64.6	70.0	36.7	59.6
Live alone	7.7	7.4	8.0	6.3	12.2	4.6	0.0	13.3	6.4
Live with spouse or significant other	12.4	12.3	12.6	25.0	12.2	9.2	10.0	20.0	8.5
Live with a friend or roommate	23.4	21.3	26.4	31.3	17.1	21.5	20.0	30.0	25.5
Utility of high school education	*n* = 224	*n* = 130	*n* =94	*n* = 18	*n* = 42	*n* = 70	*n* = 12	*n* = 30	*n* = 52
Not at all	6.3	4.6	8.5	0.0	4.8	5.7	8.3	3.3	11.5
Somewhat	30.4	30.8	29.8	27.8	45.2	22.9	25.0	43.3	23.1
Fairly	36.6	33.9	40.4	44.4	23.8	37.1	33.3	40.0	42.3
Very	23.2	26.9	18.1	27.8	19.1	31.4	25.0	13.3	19.2
Extremely	3.6	3.9	3.2	0.0	7.1	2.9	8.3	0.0	3.9

Note. 1995 and 1996 panels were combined for this analysis. Source: 1998 Education-To-Careers Follow-Up Survey and high school transcripts.

Table B6

Demographics of Study Participants by Tech Prep Status and Panel for Miami Valley (OH)

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel		Non-tech prep by panel	
				'96	'97	'96	'97
Gender	$n = 346$	$n = 191$	$n = 155$	$n = 81$	$n = 110$	$n = 56$	$n = 99$
Male	60.4	69.1	49.7	69.1	69.1	51.8	48.5
Female	39.6	30.9	50.3	30.9	30.9	48.2	51.5
		$\chi^2 = 10.14$, $df = 3$, $p = .017$					
Race/ethnicity	$n = 198$	$n = 100$	$n = 98$	$n = 35$	$n = 65$	$n = 34$	$n = 64$
Asian	1.0	1.0	1.0	2.9	0.0	0.0	1.6
Black	7.6	6.0	9.2	8.6	4.6	2.9	12.5
Hispanic	0.5	1.0	0.0	0.0	1.5	0.0	0.0
Other	2.0	1.0	3.1	2.9	0.0	2.9	3.1
White	88.9	91.0	86.7	85.7	93.9	94.1	82.8
Marital status	$n = 198$	$n = 100$	$n = 98$	$n = 35$	$n = 65$	$n = 34$	$n = 64$
Single	91.9	96.0	87.8	97.1	95.4	88.2	87.5
Single with children	1.5	2.0	1.0	2.9	1.5	0.0	1.6
Married	2.5	1.0	4.1	0.0	1.5	5.9	3.1
Married with children	4.0	1.0	7.1	0.0	1.5	5.9	7.8
		$\chi^2 = 4.53$, $df = 1$, $p = .03$ *Single with children*, *Married*, and *Married with children* categories were combined for χ^2 analysis.					
Father's education level	$n = 191$	$n = 97$	$n = 94$	$n = 34$	$n = 63$	$n = 33$	$n = 61$
Less than HS graduate	8.9	9.3	8.5	14.7	6.4	6.1	9.8
HS graduate	34.0	40.2	27.7	61.8	28.6	30.3	26.2
College, no degree	19.9	17.5	22.3	11.8	20.6	24.2	21.3
2-year associate's degree	8.9	8.3	9.6	5.9	9.5	9.1	9.8
4-year bachelor's degree	17.8	19.6	16.0	5.9	27.0	12.1	18.0
Graduate degree	10.5	5.2	16.0	0.0	7.9	18.2	14.8
				$\chi^2 = 16.58$, $df = 3$, $p < .001$			
		Less than HS graduate and *HS graduate* categories were combined, and *4-year bachelor's degree* and *Graduate degree* categories were combined for χ^2 analysis.					

Table B6 (continued)

				Tech prep by panel		Non-tech prep by panel	
Variables	**Total**	**Tech prep**	**Non-tech prep**	**’96**	**’97**	**’96**	**’97**
Mother’s education level	*n* = 192	*n* = 95	*n* = 97	*n* = 34	*n* = 61	*n* = 34	*n* = 63
Less than HS graduate	4.2	6.3	2.1	8.8	4.9	2.9	1.6
HS graduate	36.5	36.8	36.1	47.1	31.2	41.2	33.3
College, no degree	24.0	21.1	26.8	17.7	23.0	17.7	31.8
2-year associate’s degree	13.5	17.9	9.3	11.8	21.3	5.9	11.1
4-year bachelor’s degree	17.7	14.7	20.6	11.8	16.4	23.5	19.1
Graduate degree	4.2	3.2	5.2	2.9	3.3	8.8	3.2
Family income	*n* = 194	*n* = 99	*n* = 95	*n* = 35	*n* = 64	*n* = 34	*n* = 61
$14,999 or less	3.6	5.1	2.1	5.7	4.7	0.0	3.3
$15,000–$29,999	10.3	11.1	9.5	14.3	9.4	2.9	13.1
$30,000–$44,999	16.0	15.2	16.8	25.7	9.4	32.4	8.2
$45,000–$59,999	14.4	12.1	16.8	14.3	10.9	20.6	14.8
$60,000–$74,999	14.9	18.2	11.6	14.3	20.3	8.8	13.1
$75,000–$89,999	10.8	11.1	10.5	8.6	12.5	8.8	11.5
$90,000 or more	7.2	7.1	7.4	2.9	9.4	2.9	9.8
Present residence	*n* = 191	*n* = 97	*n* = 94	*n* = 34	*n* = 63	*n* = 34	*n* = 60
Live with my parent(s)	67.1	72.2	61.9	61.8	77.8	64.7	58.3
Live alone	8.4	11.3	5.4	17.6	7.9	2.9	6.7
Live with spouse or significant other	9.0	6.2	11.9	8.8	4.8	11.8	11.7
Live with a friend or roommate	16.5	10.3	22.8	11.8	9.5	20.6	23.3
Utility of high school education	*n* = 197	*n* = 99	*n* = 98	*n* = 34	*n* = 65	*n* = 34	*n* = 64
Not at all	7.6	9.1	6.1	8.8	9.2	8.8	4.7
Somewhat	33.5	37.4	29.6	35.3	38.5	17.7	35.9
Fairly	35.5	30.3	40.8	26.5	32.3	44.1	39.1
Very	20.3	19.2	21.4	20.6	18.5	29.4	17.2
Extremely	3.1	4.0	2.0	8.8	1.5	0.0	3.1

Note. Source: 1998 Education-To-Careers Follow-Up Survey and high school transcripts.

Table B7

Demographics of Study Participants by Tech Prep Status and Panel for Mt. Hood (OR)

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
				’95	’’96	97	’95	9’6	’97
Gender	*n* = 489	*n* = 251	*n* = 238	*n* = 57	*n* = 95	*n* = 99	*n* = 60	*n* = 84	*n* = 94
Male	56.4	59.0	53.8	68.4	54.7	57.6	46.7	54.8	57.5
Female	43.6	41.0	46.2	31.6	45.3	42.4	53.3	45.2	42.6
Race/ethnicity	*n* = 225	*n* = 115	*n* = 110	*n* = 21	*n* = 40	*n* = 54	*n* = 30	*n* = 43	*n* = 37
Asian	6.2	4.4	8.2	4.8	2.5	5.6	6.7	9.3	8.1
Black	6.2	7.0	5.5	4.8	10.0	5.6	13.3	4.7	0.0
Hispanic	5.8	7.8	3.6	14.3	5.0	7.4	3.3	2.3	5.4
Native American/ Alaska Native	0.9	0.9	0.9	4.8	0.0	0.0	3.3	0.0	0.0
Other	2.7	1.7	3.6	4.8	0.0	1.9	3.3	2.3	5.4
White	78.2	78.3	78.2	66.7	82.5	79.6	70.0	81.4	81.1
Marital status	*n* = 225	*n* = 115	*n* = 110	*n* = 21	*n* = 40	*n* = 54	*n* = 30	*n* = 43	*n* = 37
Single	83.6	85.2	81.8	66.7	85.0	92.6	70.0	81.4	91.9
Single with children	5.8	5.2	6.4	19.1	5.0	0.0	6.7	9.3	2.7
Married	6.7	5.2	8.2	9.5	5.0	3.7	13.3	7.0	5.4
Married with children	4.0	4.4	3.6	4.8	5.0	3.7	10.0	2.3	0.0
				$\chi^2 = 4.40$, *df* = 1, *p* = .036 *Single with children*, *Married*, and *Married with children* categories were combined for χ^2 analysis.					
Father's education level	*n* = 212	*n* = 112	*n* = 100	*n* = 20	*n* = 39	*n* = 53	*n* = 26	*n* = 40	*n* = 34
Less than HS graduate	7.5	6.3	9.0	5.0	10.3	3.8	7.7	2.5	17.7
HS graduate	31.1	33.9	28.0	30.0	33.3	35.9	23.1	27.5	32.4
College, no degree	27.4	26.8	28.0	25.0	28.2	26.4	30.8	32.5	20.6
2-year associate's degree	11.3	13.4	9.0	10.0	15.4	13.2	7.7	15.0	2.9
4-year bachelor's degree	16.0	13.4	19.0	25.0	10.3	11.3	26.9	17.5	14.7
Graduate degree	6.6	6.3	7.0	5.0	2.6	9.4	3.9	5.0	11.8

Table B-7 (continued)

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
				'95	'96	'97	'95	'96	'97
Mother's education level	*n* = 217	*n* = 112	*n* = 105	*n* = 20	*n* = 39	*n* = 53	*n* = 29	*n* = 41	*n* = 35
Less than HS graduate	7.8	8.9	6.7	5.0	7.7	11.3	3.5	4.9	11.4
HS graduate	30.0	28.6	31.4	25.0	33.3	26.4	27.6	19.5	48.6
College, no degree	33.2	33.0	33.3	50.0	25.6	32.1	44.8	36.6	20.0
2-year associate's degree	11.5	13.4	9.5	0.0	20.5	13.2	10.3	14.6	2.9
4-year bachelor's degree	13.8	12.5	15.2	20.0	5.1	15.1	13.8	19.5	11.4
Graduate degree	3.7	3.6	3.8	0.0	7.7	1.9	0.0	4.9	5.7
							$\chi^2 = 11.96$, $df = 3$, $p = .008$		
				Less than HS graduate and *HS graduate* categories were combined, and *4-year bachelor's degree* and *Graduate degree* categories were combined for χ^2 analysis.					
Family income	*n* = 171	*n* = 88	*n* = 83	*n* = 14	*n* = 32	*n* = 42	*n* = 25	*n* = 31	*n* = 27
$14,999 or less	12.3	13.6	10.8	21.4	12.5	11.9	28.0	0.0	7.4
$15,000–$29,999	14.6	12.5	16.9	21.4	6.3	14.3	16.0	19.4	14.8
$30,000– $44,999	28.1	26.1	30.1	7.1	34.4	26.2	24.0	32.3	33.3
$45,000–$59,999	17.5	17.1	18.1	21.4	18.8	14.3	12.0	22.6	18.5
$60,000–$74,999	12.9	18.2	7.2	14.3	21.9	16.7	8.0	9.7	3.7
$75,000–$89,999	7.6	5.7	9.6	7.1	6.3	4.8	4.0	16.1	7.4
$90,000 or more	7.0	6.8	7.2	7.1	0.0	11.9	8.0	0.0	14.8
Present residence	*n* = 218	*n* = 112	*n* = 106	*n* = 19	*n* = 39	*n* = 54	*n* = 29	*n* = 40	*n* = 37
Live with my parent(s)	57.8	60.7	54.7	52.6	51.3	70.4	44.8	52.5	64.9
Live alone	4.6	4.5	4.7	5.3	7.7	1.9	6.9	5.0	2.7
Live with spouse or significant other	17.9	17.0	18.9	26.3	20.5	11.1	27.6	25.0	5.4
Live with a friend or roommate	19.7	17.9	21.7	15.8	20.5	16.7	20.7	17.5	27.0
Utility of high school education	*n* = 224	*n* = 115	*n* = 109	*n* = 21	*n* = 40	*n* = 54	*n* = 30	*n* = 43	*n* = 36
Not at all	4.0	3.5	4.6	0.0	2.5	5.6	0.0	9.3	2.8
Somewhat	25.4	27.0	23.9	19.1	22.5	33.3	20.0	30.2	19.4
Fairly	35.7	35.7	35.8	33.3	45.0	29.6	36.7	34.9	36.1
Very	26.3	25.2	27.5	42.9	17.5	24.1	33.3	23.3	27.8
Extremely	8.5	8.7	8.3	4.8	12.5	7.4	10.0	2.3	13.9

Note. 1995 and 1996 panels were combined this analysis. Source: 1998 Education-To-Careers Follow-Up Survey and high school transcripts.

Table B8

Demographics of Study Participants by Tech Prep Status and Panel for Guilford County (NC)

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
				'96	'97	'98	'96	'97	'98
Gender	$n = 723$	$n = 412$	$n = 311$	$n = 99$	$n = 135$	$n = 178$	$n = 99$	$n = 127$	$n = 85$
Male	46.5	46.1	47.0	52.5	45.2	43.3	43.4	50.4	45.9
Female	53.5	53.9	53.1	47.5	54.8	56.7	56.6	49.6	54.1
Race/ethnicity	$n = 410$	$n = 237$	$n = 173$	$n = 47$	$n = 80$	$n = 110$	$n = 51$	$n = 72$	$n = 50$
Asian	3.9	4.2	3.5	2.1	6.3	3.6	0.0	4.2	6.0
Black	36.6	39.2	33.0	40.4	36.3	40.9	35.3	30.6	34.0
Hispanic	2.4	1.7	3.5	0.0	3.8	0.9	0.0	4.2	6.0
Native American/ Alaska Native	1.7	0.8	2.9	0.0	1.3	0.9	3.9	4.2	0.0
Other	2.4	3.0	1.7	4.3	3.8	1.8	0.0	1.4	4.0
White	52.9	51.1	55.5	53.2	48.8	51.8	60.8	55.6	50.0
Marital status	$n = 352$	$n = 205$	$n = 147$	$n = 37$	$n = 70$	$n = 98$	$n = 39$	$n = 60$	$n = 48$
Single	92.0	90.7	93.9	78.4	87.1	98.0	89.7	91.7	100.0
Single with children	3.1	3.9	2.0	10.8	4.3	1.0	2.6	3.3	0.0
Married	2.6	3.4	1.4	8.1	4.3	1.0	0.0	3.3	0.0
Married with children	2.3	2.0	2.7	2.7	4.3	0.0	7.7	1.7	0.0
				$\chi^2 = 13.87$, $df = 2$, $p = .001$ *Single with children*, *Married*, and *Married with children* categories were combined for χ^2 analysis.					
Father's education level	$n = 327$	$n = 188$	$n = 139$	$n = 34$	$n = 63$	$n = 91$	$n = 37$	$n = 56$	$n = 46$
Less than HS graduate	13.1	13.8	12.2	20.6	11.1	13.2	10.8	8.9	17.4
HS graduate	32.4	36.2	27.3	38.2	28.6	40.7	27.0	30.4	23.9
College, no degree	17.1	17.6	16.6	8.8	27.0	14.3	27.0	14.3	10.9
2-year associate's degree	11.6	13.3	9.4	17.7	9.5	14.3	5.4	10.7	10.9
4-year bachelor's degree	16.5	14.9	18.7	11.8	14.3	16.5	8.1	23.2	21.7
Graduate degree	9.2	4.3	15.8	2.9	9.5	1.1	21.6	12.5	15.2
		$\chi^2 = 10.56$, $df = 4$, $p = .032$ *4-year bachelor's degree* and *Graduate degree* categories were combined for χ^2 analysis.							

Table B8 (continued)

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
				'96	'97	'98	'96	'97	'98
Mother's education level	*n* = 342	*n* = 197	*n* = 145	*n* = 36	*n* = 67	*n* = 94	*n* = 38	*n* = 59	*n* = 48
Less than HS graduate	7.9	8.1	7.6	5.6	9.0	8.5	7.9	5.1	10.4
HS graduate	38.0	38.6	37.2	44.4	38.8	36.2	31.6	42.4	35.4
College, no degree	18.7	20.3	16.6	11.1	20.9	23.4	10.5	25.4	10.4
2-year associate's degree	12.6	14.2	10.3	13.9	10.5	17.0	15.8	8.5	8.3
4-year bachelor's degree	17.5	16.8	18.6	22.2	19.4	12.8	26.3	8.5	25.0
Graduate degree	5.3	2.0	9.7	2.8	1.5	2.1	7.9	10.2	10.4
Family income	*n* = 280	*n* = 160	*n* = 120	*n* = 30	*n* = 58	*n* = 72	*n* = 31	*n* = 53	*n* = 36
$14,999 or less	8.2	10.0	5.8	16.7	6.9	9.7	6.5	5.7	5.6
$15,000–$29,999	15.7	19.4	10.8	13.3	19.0	22.2	6.5	17.0	5.6
$30,000–$44,999	18.9	18.8	19.2	16.7	22.4	16.7	16.1	20.8	19.4
$45,000–$59,999	25.0	24.4	25.8	23.3	27.6	22.2	35.5	22.6	22.2
$60,000–$74,999	16.4	13.1	20.8	10.0	10.3	16.7	19.4	18.9	25.0
$75,000–$89,999	5.7	6.9	4.2	6.7	10.3	4.2	3.2	3.8	5.6
$90,000 or more	10.0	7.5	13.3	13.3	3.5	8.3	12.9	11.3	16.7
Present residence	*n* = 329	*n* = 193	*n* = 136	*n* = 36	*n* = 68	*n* = 89	*n* = 32	*n* = 60	*n* = 44
Live with my parent(s)	69.0	68.4	69.9	58.3	67.6	73.0	65.6	65.0	79.5
Live alone	6.4	6.7	5.9	8.3	7.4	5.6	3.1	8.3	4.5
Live with spouse or significant other	9.1	8.8	9.6	16.7	10.3	4.5	12.5	11.7	4.5
Live with a friend or roommate	15.5	16.1	14.7	16.7	14.7	16.9	18.7	15.0	11.4
Utility of high school education	*n* = 356	*n* = 208	*n* = 148	*n* = 38	*n* = 71	*n* = 99	*n* = 39	*n* = 60	*n* = 49
Not at all	9.3	12.5	4.73	7.89	11.27	15.15	2.56	5	6.12
Somewhat	34.0	34.6	33.1	29.0	38.0	34.3	23.1	41.7	30.6
Fairly	33.1	34.6	31.1	31.6	31.0	38.4	30.8	23.3	40.8
Very	22.8	18.3	29.1	31.6	19.7	12.1	41.0	28.3	20.4
Extremely	0.8	0.0	2.0	0.0	0.0	0.0	2.6	1.7	2.0
		$\chi^2 = 8.06$, $df = 3$, $p = .018$							
		Very and *Extremely* categories were combined for χ^2 analysis							

Note. 1996 and 1997 panels were combined for this analysis. *Source:* 1998 Education-To-Careers Follow-Up Survey and high school transcripts.

Table B9

Demographics of General Tech Prep Participants and Youth Apprentices for Guilford County (NC)

Variables	Total	General tech prep	Tech prep/ youth apprentices	General tech prep by panel			Tech prep/ youth apprentices by panel		
				'96	'97	'98	'96	'97	'98
Gender	$n = 412$	$n = 373$	$n = 39$	$n = 97$	$n = 116$	$n = 160$	$n = 2$	$n = 19$	$n = 18$
Male	53.7	44.0	66.7	52.6	39.7	41.9	50.0	79.0	55.6
Female	46.3	56.0	33.3	47.4	60.3	58.1	50.0	21.1	44.4
		$\chi^2 = 7.32$, $df = 1$, $p = .007$							
Race/ethnicity	$n = 237$	$n = 210$	$n = 27$	$n = 46$	$n = 69$	$n = 95$	$n = 1$	$n = 11$	$n = 15$
Asian	2.8	4.8	0.0	2.2	7.3	4.2	0.0	0.0	0.0
Black	39.8	39.1	40.7	41.3	33.3	42.1	0.0	54.6	33.3
Hispanic	1.1	1.9	0.0	0.0	4.4	1.1	0.0	0.0	0.0
Native American/ Alaska Native	0.5	1.0	0.0	0.0	1.5	1.1	0.0	0.0	0.0
Other	1.9	3.3	0.0	4.4	4.4	2.1	0.0	0.0	0.0
White	53.9	50.0	59.3	52.2	49.3	49.5	100.0	45.5	66.7
Marital status	$n = 205$	$n = 181$	$n = 24$	$n = 36$	$n = 61$	$n = 84$	$n = 1$	$n = 9$	$n = 14$
Single	88.2	91.7	83.3	77.8	91.8	97.6	100.0	55.6	100.0
Single with children	5.4	3.3	8.3	11.1	1.6	1.2	0.0	22.2	0.0
Married	3.7	3.3	4.2	8.3	3.3	1.2	0.0	11.1	0.0
Married with children	2.7	1.7	4.2	2.8	3.3	0.0	0.0	11.1	0.0
Father's education level	$n = 188$	$n = 165$	$n = 23$	$n = 33$	$n = 55$	$n = 77$	$n = 1$	$n = 8$	$n = 14$
Less than HS graduate	13.6	13.9	13.0	21.2	12.7	11.7	0.0	0.0	21.4
HS graduate	32.7	37.6	26.1	39.4	29.1	42.9	0.0	25.0	28.6
College, no degree	22.0	15.8	30.4	6.1	23.6	14.3	100.0	50.0	14.3
2-year associate's degree	13.2	13.3	13.0	18.2	10.9	13.0	0.0	0.0	21.4
4-year bachelor's degree	14.3	15.2	13.0	12.1	14.6	16.9	0.0	12.5	14.3
Graduate degree	4.3	4.2	4.4	3.0	9.1	1.3	0.0	12.5	0.0

Table B9 (continued)

Variables	Total	General tech prep	Tech prep/ youth appren-tices	General tech prep by panel			Tech prep/ youth apprentices by panel		
				'96	'97	'98	'96	'97	'98
Mother's education level	*n* = 197	*n* = 173	*n* = 24	*n* = 35	*n* = 58	*n* = 80	*n* = 1	*n* = 9	*n* = 14
Less than HS graduate	8.2	8.1	8.3	5.7	10.3	7.5	0.0	0.0	14.3
HS graduate	41.1	37.6	45.8	42.9	39.7	33.8	100.0	33.3	50.0
College, no degree	20.5	20.2	20.8	11.4	20.7	23.8	0.0	22.2	21.4
2-year associate's degree	15.1	13.9	16.7	14.3	8.6	17.5	0.0	22.2	14.3
4-year bachelor's degree	12.4	18.5	4.2	22.9	20.7	15.0	0.0	11.1	0.0
Graduate degree	2.8	1.7	4.2	2.9	0.0	2.5	0.0	11.1	0.0
Family income	*n* = 160	*n* = 139	*n* = 21	*n* = 29	*n* = 50	*n* = 60	*n* = 1	*n* = 8	*n* = 12
$14,999 or less	6.6	11.5	0.0	17.2	8.0	11.7	0.0	0.0	0.0
$15,000–$29,999	19.3	19.4	19.1	10.3	18.0	25.0	100.0	25.0	8.3
$30,000–$44,999	17.2	19.4	14.3	17.2	22.0	18.3	0.0	25.0	8.3
$45,000–$59,999	27.4	23.0	33.3	24.1	28.0	18.3	0.0	25.0	41.7
$60,000–$74,999	16.8	11.5	23.8	10.3	8.0	15.0	0.0	25.0	25.0
$75,000–$89,999	6.1	7.2	4.8	6.9	12.0	3.3	0.0	0.0	8.3
$90,000 or more	6.6	7.9	4.8	13.8	4.0	8.3	0.0	0.0	8.3
Present residence	*n* = 193	*n* = 170	*n* = 23	*n* = 35	*n* = 59	*n* = 76	*n* = 1	*n* = 9	*n* = 13
Live with my parent(s)	68.8	68.2	69.6	57.1	71.2	71.1	100.0	44.4	84.6
Live alone	7.4	6.5	8.7	8.6	5.1	6.6	0.0	22.2	0.0
Live with spouse or significant other	10.2	8.2	13.0	17.1	8.5	3.9	0.0	22.2	7.7
Live with a friend or roommate	13.6	17.1	8.7	17.1	15.3	18.4	0.0	11.1	7.7
Utility of high school education	*n* = 208	*n* = 183	*n* = 25	*n* = 36	*n* = 62	*n* = 85	*n* = 2	*n* = 9	*n* = 14
Not at all	15.0	11.5	20	8.3	11.3	12.9	0	11.1	28.6
Somewhat	36.4	33.9	40.0	27.8	38.7	32.9	50.0	33.3	42.9
Fairly	33.7	35.0	32.0	30.6	30.7	40.0	50.0	33.3	28.6
Very	14.8	19.7	8.0	33.3	19.4	14.1	0.0	22.2	0.0
Extremely	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Note. 1996 and 1997 panels were combined for the *General tech prep analysis*. χ^2 analysis by panel was not possible on the *Youth apprentice* group because of the low numbers of students involved. Source: 1998 Education-To-Careers Follow-Up Survey and high school transcripts.

Table B10

Demographics of Study Participants by Tech Prep Status and Panel for San Mateo (CA)

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel '95	Tech prep by panel '96	Tech prep by panel '97	Non-tech prep by panel '95	Non-tech prep by panel '96	Non-tech prep by panel '97
Gender	*n* = 618	*n* = 310	*n* = 308	*n* = 76	*n* = 118	*n* = 116	*n* = 75	*n* = 116	*n* = 117
Male	50.3	51.0	49.7	44.7	49.2	56.9	46.7	51.7	49.6
Female	49.7	49.0	50.3	55.3	50.9	43.1	53.3	48.3	50.4
Race/ethnicity	*n* = 236	*n* = 123	*n* = 113	*n* = 27	*n* = 42	*n* = 54	*n* = 31	*n* =40	*n* = 42
Asian	36.0	35.0	37.2	22.2	45.2	33.3	32.3	32.5	45.2
Black	1.3	0.0	2.7	0.0	0.0	0.0	3.2	5.0	0.0
Hispanic	17.8	21.1	14.2	33.3	14.3	20.4	16.1	10.0	16.7
Other	11.0	11.4	10.6	14.8	11.9	9.3	19.4	12.5	2.4
White	33.9	32.5	35.4	29.6	28.6	37.0	29.0	40.0	35.7
Marital status	*n* = 237	*n* = 124	*n* = 113	*n* = 27	*n* = 42	*n* = 55	*n* = 31	*n* = 40	*n* = 42
Single	92.8	93.6	92.0	96.3	90.48	94.55	87.1	97.5	90.48
Single with children	3.0	2.4	3.5	0.0	4.8	1.8	3.2	2.5	4.8
Married	1.3	1.6	0.9	0.0	0.0	3.6	3.2	0.0	0.0
Married with children	3.0	2.4	3.5	3.7	4.8	0.0	6.5	0.0	4.8
Father's education level	*n* = 224	*n* = 116	*n* = 108	*n* = 25	*n* = 40	*n* = 51	*n* = 30	*n* = 38	*n* = 40
Less than HS graduate	8.9	9.5	8.3	8.0	7.5	11.8	0.0	7.9	15.0
HS graduate	17.9	20.7	14.8	24.0	20.0	19.6	23.3	7.9	15.0
College, no degree	21.4	24.1	18.5	28.0	25.0	21.6	16.7	13.2	25.0
2-year associate's degree	8.0	9.5	6.5	16.0	10.0	5.9	10.0	7.9	2.5
4-year bachelor's degree	29.9	25.0	35.2	20.0	30.0	23.5	26.7	52.6	25.0
Graduate degree	13.8	11.2	16.7	4.0	7.5	17.7	23.3	10.5	17.5
Mother's education level	*n* = 230	*n* = 120	*n* = 110	*n* = 26	*n* = 40	*n* = 54	*n* = 31	*n* = 40	*n* = 39
Less than HS graduate	8.7	11.7	5.5	15.4	10.0	11.1	0.0	10.0	5.1
HS graduate	20.4	21.7	19.1	30.8	20.0	18.5	29.0	10.0	20.5
College, no degree	23.0	25.0	20.9	15.4	25.0	29.6	16.1	32.5	12.8
2-year associate's degree	14.3	15.0	13.6	19.2	15.0	13.0	6.5	10.0	23.1
4-year bachelor's degree	25.7	20.8	30.9	15.4	27.5	18.5	38.7	27.5	28.2
Graduate degree	7.8	5.8	10.0	3.9	2.5	9.3	9.7	10.0	10.3

Table B10 (continued)

Variables	**Total**	**Tech prep**	**Non-Tech Prep**	**Tech prep by panel**			**Non-tech prep by panel**		
				’95	**’96**	**’97**	**’95**	**’96**	**’97**
Family Income	*n* = 177	*n* = 93	*n* = 84	*n* = 18	*n* = 33	*n* = 42	*n* = 26	*n* = 30	*n* = 28
$14,999 or less	7.9	9.7	6.0	0.0	15.2	9.5	7.7	3.3	7.1
$15,000–$29,999	11.3	14.0	8.3	16.7	15.2	11.9	3.9	13.3	7.1
$30,000–$44,999	17.0	18.3	15.5	16.7	15.2	21.4	15.4	16.7	14.3
$45,000–$59,999	17.5	16.1	19.1	27.8	15.2	11.9	15.4	23.3	17.9
$60,000–$74,999	14.7	16.1	13.1	5.6	21.2	16.7	15.4	6.7	17.9
$75,000–$89,999	10.2	9.7	10.7	11.1	6.1	11.9	11.5	13.3	7.1
$90,000 or more	21.5	16.1	27.4	22.2	12.1	16.7	30.8	23.3	28.6
Present residence	*n* = 222	*n* = 116	*n* = 106	*n* = 26	*n* = 40	*n* = 50	*n* = 30	*n* = 38	*n* = 38
Live with my parent(s)	73.4	73.3	73.6	61.5	70.0	82.0	76.7	78.9	65.8
Live alone	2.7	2.6	2.8	3.8	5.0	0.0	3.3	2.6	2.6
Live with spouse or significant other	5.9	6.9	4.7	15.4	5.0	4.0	6.7	0.0	7.9
Live with a friend or roommate	18.0	17.2	18.9	19.2	20.0	14.0	13.3	18.4	23.7
Utility of high school education	*n* = 236	*n* = 123	*n* = 113	*n* = 27	*n* = 41	*n* = 55	*n* = 30	*n* = 40	*n* = 43
Not at all	9.3	8.9	9.7	3.7	7.3	12.7	10.0	10.0	9.3
Somewhat	29.7	26.0	33.6	22.2	34.2	21.8	23.3	40.0	34.9
Fairly	37.7	43.9	31.0	51.9	41.5	41.8	26.7	27.5	37.2
Very	20.3	18.7	22.1	22.2	14.6	20.0	30.0	22.5	16.3
Extremely	3.0	2.4	3.5	0.0	2.4	3.6	10.0	0.0	2.3

Note. Source: 1998 Education-To-Careers Follow-Up Survey and high school transcripts.

Appendix C

High School Math Course-Taking

Table C1

High School Math Course-Taking by Tech Prep Status and Panel for East-Central Illinois (IL)

	Tech prep	Non-tech prep	Tech prep by panel		Non-tech prep by panel	
Variables	**Total**	**Total**	**'96**	**'97**	**'96**	**'97**
	$n = 285$	$n = 257$	$n = 126$	$n = 159$	$n = 114$	$n = 143$
Math GPA						
Mean	2.22	2.34	2.18	2.25	2.23	2.43
	$t = -2.15$, $df = 540$, $p = .032$				$t = -2.37$, $df = 255$, $p = .019$	
Total semesters						
Mean Semesters	5.46	5.74	5.64	5.31	5.62	5.83
	$t = -2.21$, $df = 540$, $p = .028$					
Percentage of total by number of semesters						
1–2 semesters	0.7	1.6	0.0	1.3	0.9	2.1
3–4 semesters	35.8	24.9	31.8	39.0	28.1	23.1
5–6 semesters	43.9	46.7	42.9	44.0	46.5	46.2
7–8 semesters	18.6	26.5	23.8	15.1	24.6	28.0
More than 8	1.1	0.4	1.6	0.6	0.0	0.7
Average percentage of math courses taken by level						
Basic math	25.2	24.9	23.5	26.5	27.4	23.0
(Mean semesters)	(1.21)	(1.25)	(1.21)	(1.22)	(1.34)	(1.17)
Regular math	71.7	72.0	73.5	70.2	70.5	73.3
(Mean semesters)	(4.05)	(4.30)	(4.24)	(3.89)	(4.16)	(4.41)
AP+ honors	3.1	3.0	3.0	3.3	2.1	3.8
(Mean semesters)	(0.20)	(0.19)	(0.20)	(0.19)	(0.12)	(0.25)
Percentage taking 12th-grade math	51.2	52.9	40.5	59.8	51.8	53.9
			$\chi^2 = 10.45$, $df = 1$, $p = .001$			
Mean semesters (0s included)	1.07	1.1	0.88	1.23	1.14	1.06
			$t = 2.43$, $df = 283$, $p = .016$			
Mean semesters (0s excluded)	2.1	2.07	2.18	2.05	2.2	1.97

Table C1 (continued)

	Tech prep	Non-tech prep	Tech prep by panel		Non-tech prep by panel	
Variables	**Total**	**Total**	**'96**	**'97**	**'96**	**'97**
Lowest math						
Mean level	2.74	2.77	2.83	2.67	2.71	2.82
Percentage of total by level						
Level 1–basic math	23.2	28.8	26.2	20.8	32.5	25.9
Level 2–pre-algebra	26.0	21.0	19.8	30.8	19.3	22.4
Level 3–computer math	13.3	7.4	9.5	16.4	7.0	7.7
Level 4–algebra I	33.0	35.8	38.9	28.3	34.2	37.1
Level 5–algebra I (honors)	1.4	2.3	0.8	1.9	0.9	3.5
Level 6–geometry	2.1	3.9	4.0	0.6	6.1	2.1
Level 7–geometry (honors & analytic)	1.1	0.8	0.8	1.3	0.0	1.4
Highest math						
Mean Level	6.33	6.82	6.59	6.12	6.54	7.06
	$t = -2.04$, $df = 540$, $p = .042$					
Percentage of total by level						
Level 1–basic math	2.1	3.5	3.2	1.3	5.3	2.1
Level 2–pre-algebra	4.9	4.7	1.6	7.6	3.5	5.6
Level 3–computer math	9.5	4.7	6.4	12.0	4.4	4.9
Level 4–algebra I	24.9	18.7	26.2	23.9	24.6	14.0
Level 5–algebra I (honors)	0.0	0.0	0.0	0.0	0.0	0.0
Level 6–geometry	11.6	11.7	13.5	10.1	10.5	12.6
Level 7–geometry (honors & analytic)	0.4	0.0	0.8	0.0	0.0	0.0
Level 8–algebra II	26.0	30.0	27.0	25.2	27.2	32.2
Level 9–algebra II (honors)	2.8	2.7	0.8	4.4	1.8	3.5
Level 10–trigonometry	13.7	21.4	14.3	13.2	20.2	22.4
Level 11–trig. (honors)	0.0	0.0	0.0	0.0	0.0	0.0
Level 12–calculus	3.9	2.7	6.4	1.9	2.6	2.8
Level 13–AP calculus	0.4	0.0	0.0	0.6	0.0	0.0
Progress (highest math – lowest math)						
Mean	3.59	4.06	3.75	3.45	3.83	4.24
	$t = -2.49$, $df = 540$, $p = .013$					
*Q*1,Mdn, *Q*3	2, 4, 5	2, 4, 6	2, 4, 5	1, 4, 5	3, 4, 5	2, 4, 6

Note. Source: high school transcripts.

Table C2

High School Math Course-Taking by Tech Prep Status and Panel for Metro

	Tech prep	**Non-tech prep**	**Tech prep by panel**			**Non-tech prep by panel**		
Variables	**Total**	**Total**	**'95**	**'96**	**'97**	**'95**	**'96**	**'97**
	$n = 298$	$n = 308$	$n = 79$	$n = 93$	$n = 126$	$n = 102$	$n = 90$	$n = 116$
Math GPA								
Mean	2.11	2.07	2.1	2.05	2.16	2.1	2.03	2.08
Total semesters								
Mean semesters	7.00	7.02	6.75	6.6	7.44	6.92	6.77	7.29
			$F = 9.71$, $df = 2,295$, $p < .001$			$F = 3.45$, $df = 2,305$, $p = .033$		
Percentage of total by number of semesters								
1–2 semesters	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3–4 semesters	1.3	1.6	0.0	3.2	0.8	1.0	3.3	0.9
5–6 semesters	49.0	45.5	60.8	58.1	39.7	49.0	57.8	32.8
7–8 semesters	35.2	39.9	31.7	34.4	38.9	38.2	27.8	50.9
More than 8	14.4	13.0	7.6	4.3	20.6	11.8	11.1	15.5
Average percentage of math courses taken by level								
Basic math	16.9	26.4	18.7	20.5	13.1	29.5	30.6	20.34
(Mean semesters)	(1.14)	(1.81)	(1.27)	(1.32)	(0.93)	(2.06)	(1.99)	(1.46)
Regular math	77.39	68.6	78.7	78.3	75.9	65.3	66.2	73.2
(Mean semesters)	(5.32)	(4.73)	(5.24)	(5.15)	(5.49)	(4.41)	(4.44)	(5.22)
AP+ honors	5.7	5.1	2.6	1.3	10.98	5.1	3.1	6.5
(Mean semesters)	(0.54)	(0.48)	(0.24)	(0.13)	(1.03)	(0.45)	(0.33)	(0.61)
	Wilks' Lambda = 0.953, $F = 14.8$, $df = 2,603$, $p<.001$		Wilks' Lambda = .879, $F = 9.77$, $df = 4,588$ $p < .001$			Wilks' Lambda = .954, $F = 3.62$, $df = 4,608$, $p = .006$		
Percentage taking 12th-grade math	69.2	72.8	70.9	75.3	72.2	64.7	70.0	72.4
Mean semesters (0s included)	1.32	1.14	1.15	1.18	1.52	1.08	1.02	1.29
			$F = 3.32$, $df = 2,295$, $p = 0.037$					
Mean semesters (0s excluded)	1.81	1.65	1.63	1.57	2.11	1.67	1.46	1.79
			$F = 7.09$, $d = 2,213$, $p = .001$					

Table C2 (continued)

	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
Variables	**Total**	**Total**	**'95**	**'96**	**'97**	**'95**	**'96**	**'97**
Lowest math								
Mean level	2.37	1.89	2.11	2.29	2.58	1.75	1.76	2.11
	$t = 4.28$, $df = 604$, $p < .001$							
Percentage of total by level								
Level 1–basic math	45.0	65.3	62.0	54.8	27.0	73.5	74.4	50.9
Level 2–pre-algebra	15.4	7.5	1.3	3.2	33.3	2.0	0.0	18.1
Level 3–computer math	0.0	0.3	0.0	0.0	0.0	0.0	1.1	0.0
Level 4–algebra I	37.3	27.0	36.7	41.9	34.1	24.5	24.4	31.0
Level 5–algebra I (honors)	2.4	0.0	0.0	0.0	5.6	0.0	0.0	0.0
Highest math								
Mean level	7.49	6.99	7.30	6.77	8.13	7.00	6.41	7.42
	$t = 2.63$, $df = 604$, $p < .008$		$F = 10.15$, $df = 2{,}295$, $p < .001$				$F = 4.65$, $df = 2{,}305$, $p = .01$	
Percentage of total by level								
Level 1–basic math	0.3	0.0	0.0	1.1	0.0	0.0	0.0	0.0
Level 2–pre-algebra	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Level 3–computer math	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Level 4–algebra I	10.4	19.5	6.3	17.2	8.0	19.6	27.8	12.9
Level 5–algebra I (honors)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Level 6–geometry	32.2	38.3	38.0	39.8	23.2	35.3	45.6	35.3
Level 7–geometry (honors & analytic)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Level 8–algebra II	41.6	24.7	44.3	30.1	48.0	25.5	12.2	33.6
Level 9–algebra II (honors)	0.7	2.6	2.5	0.0	0.0	6.9	1.1	0.0
Level 10–trigonometry	5.7	7.8	5.1	8.6	4.0	6.9	7.8	8.6
Level 11–trig. (honors)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Level 12–calculus	0.0	0.7	0.0	0.0	0.0	1.0	1.1	0.0
Level 13–AP calculus	9.1	6.5	3.8	3.2	16.8	4.9	4.4	9.5
Progress (highest math – lowest math)								
Mean	5.12	5.10	5.19	4.48	5.56	5.25	4.66	5.31
				$F = 5.66$, $df = 2{,}295$, $p = .004$				
*Q*1, Mdn, *Q*3	3, 5, 6	3, 5, 6	4, 5, 7	3, 4, 5	4, 5, 7	3, 5, 7	3, 5, 5	4, 5, 6

Note. Source: high school transcripts.

Table C3

High School Math Course-Taking by Tech Prep Status and Panel for Hillsborough (FL)

	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
Variables	**Total**	**Total**	**'95**	**'96**	**'97**	**'95**	**'96**	**'97**
	$n = 298$	$n = 296$	$n = 46$	$n = 103$	$n = 149$	$n = 44$	$n = 104$	$n = 148$
Math GPA								
Mean	2.57	2.5	2.53	2.54	2.59	2.65	2.43	2.5
Total semesters								
Mean semesters	6.67	7.44	6.43	6.62	6.77	7.36	7.28	7.57
	$t = -7.76$, $df = 581$, $p < .001$							
Percentage of total by number of semesters								
1–2 semesters			0.0	0.0	0.0	0.0	0.0	0.0
3–4 semesters	0.7	0.3	0.0	1.0	0.7	2.3	0.0	0.0
5–6 semesters	61.4	30.1	76.1	59.2	58.4	25.0	36.5	27.0
7–8 semesters	32.6	57.8	21.7	35.9	33.6	63.6	52.9	59.5
More than 8	5.4	11.8	2.2	3.9	7.4	9.1	10.6	13.5
Average percentage of math courses taken by level								
Basic math	22.7	9.5	28.8	27.2	17.7	9.0	10.0	9.2
(Mean semesters)	(1.48)	(0.71)	(1.80)	(1.78)	(1.18)	(0.66)	(0.70)	(0.72)
Regular math	69.0	66.8	61.5	68.6	71.6	62.2	63.1	70.7
(Mean semesters)	(4.62)	(4.93)	(4.00)	(4.56)	(4.85)	(4.59)	(4.56)	(5.29)
AP+ honors	8.3	23.8	9.7	4.2	10.8	28.8	26.9	20.1
(Mean semesters)	(0.57)	(1.80)	(0.63)	(0.28)	(0.74)	(2.11)	(2.02)	(1.56)
	Wilks' Lambda = .877, $F = 41.55$, $df = 2{,}591$, $p < .001$		Wilks' Lambda = .944, $F = 4.27$, $df = 4{,}588$, $p = .002$					
Percentage taking 12th-grade math	47.7	77.0	26.1	49.5	53.0	79.6	70.2	81.1
	$\chi^2 = 54.55$, $df = 1$ $p < .001$		$\chi^2 = 10.44$, $df = 2$, $p = .005$					
Mean semesters (0s included)	0.83	1.47	0.46	0.78	0.98	1.45	1.32	1.57
	$t = -7.85$, $df = 592$, $p < .001$		$F = 5.29$, $df = 2, 295$, $p = .006$					
Mean semesters (0s excluded)	1.74	1.90	1.75	1.57	1.85	1.83	1.88	1.94
	$t = -2.29$, $df = 368$, $p = .023$							

Table C3 (continued)

	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
Variables	**Total**	**Total**	**'95**	**'96**	**'97**	**'95**	**'96**	**'97**
Lowest math								
Mean level	2.85	3.98	2.61	2.54	3.13	4.11	4.19	3.78
	$t = -7.93$, $df = 586$, $p < .001$		$F = 4.60$, $df = 2{,}295$, $p = .011$					
Percentage of total by level								
Level 1–basic math	24.5	8.8	28.3	32.0	18.1	9.1	10.6	7.4
Level 2–pre-algebra	31.5	19.9	34.8	31.1	30.9	11.4	17.3	24.3
Level 3–computer math	1.0	0.0	0.0	1.9	0.7	0.0	0.0	0.0
Level 4–algebra I	32.9	43.6	30.4	28.2	36.9	54.6	35.6	46.0
Level 5–algebra I (honors)	1.7	6.8	2.2	0.0	2.7	4.6	8.7	6.1
Level 6–geometry	4.4	6.4	0.0	5.8	4.7	4.6	6.7	6.8
Level 7–geometry (honors & analytic)	4.0	14.2	4.4	1.0	6.0	15.9	21.3	8.8
Level 8–algebra II	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Level 9–algebra II (honors)	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.7
Highest math								
Mean level	7.17	9.02	6.87	6.79	7.53	9.02	8.92	9.09
	$t = -10.02$, $df = 592$, $p < .001$		$F = 3.5$, $df = 2{,}295$, $p = .032$					
Percentage of total by level								
Level 1–basic math	0.3	0.0	2.2	0.0	0.0	0.0	0.0	0.0
Level 2–pre-algebra	1.3	1.0	4.4	1.9	0.0	4.6	1.0	0.0
Level 3–computer math	4.0	0.7	0.0	2.9	6.0	0.0	1.0	0.7
Level 4–algebra I	12.4	1.4	10.9	18.5	8.7	0.0	1.9	1.4
Level 5–algebra I (honors)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Level 6–geometry	27.2	9.8	28.3	32.0	23.5	9.1	16.4	5.4
Level 7–geometry (honors & analytic)	1.0	0.3	4.4	0.0	0.7	0.0	1.0	0.0
Level 8–algebra II	31.2	33.1	32.6	28.2	32.9	29.6	25.0	39.9
Level 9–algebra II (honors)	3.4	5.4	4.4	1.9	4.0	4.6	3.9	6.8
Level 10–trigonometry	14.8	35.8	10.9	9.7	19.5	38.6	34.6	35.8
Level 11–trig. (honors)	0.7	0.3	2.2	1.0	0.0	0.0	1.0	0.0
Level 12–calculus	0.7	2.0	0.0	1.0	0.7	2.3	3.9	0.7
Level 13–AP calculus	3.0	10.1	0.0	2.9	4.0	11.4	10.6	9.5
Progress (highest math – lowest math)								
Mean	4.32	5.04	4.26	4.24	4.40	4.91	4.73	5.30
	$t = -5.21$, $df = 592$ $p < .001$					$F = 3.81$, $df = 2, 293$, $p = .023$		
*Q*1, Mdn, *Q*3	3, 4, 6	4, 5, 6	4, 4, 5	3, 4, 5	3, 4, 6	4, 5.5, 6	4, 4, 6	4, 6, 6

Note. Source: high school transcripts.

Table C4

High School Math Course-Taking by Tech Prep Status and Panel for Golden Crescent (TX)

	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
Variables	**Total**	**Total**	**'95**	**'96**	**'97**	**'95**	**'96**	**'97**
	n = 295	*n* = 287	*n* = 49	*n* = 106	*n* = 140	*n* = 47	*n* = 105	*n* = 135
Math GPA								
Mean	2.63	2.66	2.63	2.55	2.69	2.81	2.58	2.67
Total semesters								
Mean semesters	6.87	6.91	6.2	7.0	7	6.96	6.7	7.07
			F = 5.87, *df* = 2,292, *p* = .003					
Percentage of total by number of semesters								
1–2 semesters	0.7	0.4	4.1	0.0	0.0	0.0	1.0	0.0
3–4 semesters	2.7	2.1	8.2	0.9	1.4	2.1	2.9	0.7
5–6 semesters	53.6	55.4	53.1	54.7	53.6	51.1	57.1	54.8
7–8 semesters	34.9	30.3	34.7	34.0	35.7	27.7	31.4	30.4
More than 8	8.1	11.9	0.0	10.4	9.3	19.2	7.6	14.1
Average percentage of math courses taken by level								
Basic math	4.0	9.0	8.4	5.0	1.7	11.9	10.2	7.0
(Mean semesters)	(0.25)	(0.54)	(0.55)	(0.32)	(0.10)	(0.68)	(0.63)	(0.43)
Regular math	78.5	73.4	79.7	76.6	79.5	70.5	71.7	75.8
(Mean semesters)	(5.25)	(4.97)	(4.88)	(5.20)	(5.41)	(4.89)	(4.69)	(5.21)
AP+ honors	17.6	17.6	12.0	18.4	18.9	17.6	18.1	17.2
(Mean semesters)	(1.37)	(1.40)	(0.78)	(1.49)	(1.49)	(1.38)	(1.38)	(1.43)
	Wilks' Lambda = .979. *F* = 6.07, *df* = 2,579, *p* = .003		Wilks' Lambda = .953, *F* = 3.53, *df* = 4,582, *p* = .007					
Percentage taking 12th-grade math	51.9	53.7	67.4	52.8	45.7	66.0	50.5	51.9
			$\chi^2 = 6.866$, *df* = 2, *p* = .032					
Mean semesters (0s included)	1.06	1.14	1.41	1.07	0.94	1.4	1.14	1.04
			F = 3.21, *df* = 2,292, *p* = .042					
Mean semesters (0s excluded)	2.05	2.12	2.09	2.02	2.06	2.13	2.26	2.01

Table C4 (continued)

	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
Variables	**Total**	**Total**	**'95**	**'96**	**'97**	**'95**	**'96**	**'97**
Lowest Math								
Mean level	4.05	3.86	4.06	3.97	4.11	3.81	3.89	3.85
Percentage of total by level								
Level 1–basic math	3.1	8.0	4.1	2.8	2.9	6.4	9.5	7.4
Level 2–pre-algebra	8.8	10.8	24.5	10.4	2.1	23.4	11.4	5.9
Level 3–computer math								
Level 4–algebra I	72.5	65.9	42.9	73.6	82.1	53.2	59.1	75.6
Level 5–algebra I (honors)	4.4	4.9	0.0	4.7	5.7	0.0	7.6	4.4
Level 6–geometry	6.8	6.3	22.5	3.8	3.6	10.6	5.7	5.2
Level 7–geometry (honors & analytic)	3.7	3.1	2.0	4.7	3.6	2.1	5.7	1.5
Level 8–algebra II	0.7	0.7	4.1	0.0	0.0	2.1	1.0	0.0
Level 9–algebra II (honors)	0.0	0.4	0.0	0.0	0.0	2.1	0.0	0.0
Highest math								
Mean level	8.61	8.40	8.47	8.55	8.71	8.91	8.23	8.36
Percentage of total by level								
Level 1–basic math	0.0	3.1	0.0	0.0	0.0	0.0	2.9	4.4
Level 2–pre-algebra	0.3	0.4	0.0	0.9	0.0	2.1	0.0	0.0
Level 3–computer math	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Level 4–algebra I	4.1	5.6	4.1	3.8	4.3	6.4	4.8	5.9
Level 5–algebra I (honors)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Level 6–geometry	26.1	25.8	26.5	24.5	27.1	21.3	27.6	25.9
Level 7–geometry (honors & analytic)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Level 8–algebra II	34.2	28.2	32.7	36.8	32.9	17.0	33.3	28.2
Level 9–algebra II (honors)	1.7	0.4	2.0	2.8	0.7	2.1	0.0	0.0
Level 10–trigonometry	2.7	5.9	12.2	1.9	0.0	17.0	4.8	3.0
Level 11–trig. (honors)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Level 12–calculus	29.8	27.2	22.5	28.3	33.6	34.0	25.7	25.9
Level 13–AP calculus	1.0	3.5	0.0	0.9	1.4	0.0	1.0	6.7
Progress (highest math – lowest math)								
Mean	4.56	4.55	4.41	4.58	4.60	5.11	4.34	4.51
*Q*1, Mdn, *Q*3	3, 4, 6	3, 4, 6	3, 4, 6	4, 4, 6		4, 4, 8	3, 4, 6	2, 4, 7

Note. Source: high school transcripts.

Table C5

High School Math Course-Taking by Tech Prep Status and Panel for Miami Valley (OH)

	Tech prep	Non-tech prep	Tech prep by panel		Non-tech prep by panel	
Variables	**Total**	**Total**	**’96**	**’97**	**’96**	**’97**
	$n = 175$	$n = 100$	$n = 74$	$n = 101$	$n = 32$	$n = 68$
Math GPA						
Mean	2.56	2.23	2.48	2.61	2.39	2.16
	$t = 4.28$, $df = 241$, $p < .001$				$t = 2.00$, $df = 98$, $p = .038$	
Total semesters						
Mean semesters	7.6	6.79	7.3	7.82	6.55	6.9
	$t = 4.34$, $df = 177$, $p < .001$		$t = -2.61$, $df = 173$, $p = .01$			
Percentage of total by number of semesters						
1–2 semesters	0.6	0.0	1.4	0.0	0.0	0.0
3–4 semesters	4.0	10.0	4.1	4.0	15.6	7.4
5–6 semesters	10.3	40.0	17.6	5.0	34.4	42.7
7–8 semesters	77.1	40.0	71.6	81.2	43.8	38.2
More than 8	8.0	10.0	5.4	9.9	6.3	11.8
Average percentage of math courses taken by level						
Basic math	21.8	13.4	26.0	18.8	13.8	13.1
(Mean semesters)	(1.65)	(0.78)	(1.84)	(1.44)	(0.78)	(0.77)
Regular math	76.3	81.1	72.0	79.5	79.5	81.9
(Mean semesters)	(5.79)	(5.57)	(5.20)	(6.22)	(5.27)	(5.71)
AP+ honors	1.9	5.5	1.9	1.8	6.7	5.0
(Mean semesters)	(0.16)	(0.44)	(0.15)	(0.16)	(0.50)	(0.41)
	Wilks' Lambda = .947, $F = 7.68$, $df = 2{,}272$, $p = .001$		Wilks' Lambda = .966, $F = 3.06$, $df = 2{,}172$, $p = .0495$			
Percentage taking 12th-grade math	94.3	57.0	91.9	96.0	53.1	58.8
	$\chi^2 = 56.86$, $df = 1$, $p < .001$					
Mean semesters (0s included)	1.87	1.15	1.84	1.9	1.03	1.21
	$t = 6.52$, $df = 128$, $p < .001$					
Mean semesters (0s excluded)	1.99	2.02	2.00	1.98	1.94	2.05

Table C5 (continued)

Variables	Tech prep Total	Non-tech prep Total	Tech prep by panel '96	Tech prep by panel '97	Non-tech prep by panel '96	Non-tech prep by panel '97
Lowest math						
Mean level	2.14	3.49	1.74	2.43	3.59	3.44
	$t = -8.06$, $df = 273$, $p < .001$		$t = -3.58$, $df = 173$, $p < .001$			
Percentage of total by level						
Level 1–basic math	45.7	7.0	55.4	38.6	3.1	8.8
Level 2–pre-algebra	18.3	27.0	21.6	15.8	34.4	23.5
Level 3–computer math	17.1	1.0	16.2	17.8	0.0	1.5
Level 4–algebra I	16.6	53.0	6.8	23.8	43.8	57.4
Level 5–algebra I (honors)	0.6	1.0	0.0	1.0	3.1	0.0
Level 6–geometry	1.1	9.0	0.0	2.0	12.5	7.4
Level 7–geometry (honors & analytic)	0.6	2.0	0.0	1.0	3.1	1.5
Highest math						
Mean level	8.87	8.2	8.3	9.29	7.91	8.34
	$t = 2.30$, $df = 149$, $p = .023$		$t = -3.91$, $df = 173$, $p < .001$			
Percentage of total by level						
Level 1–basic math	0.0	3.0	0.0	0.0	3.1	2.9
Level 2–pre-algebra	0.0	0.0	0.0	0.0	0.0	0.0
Level 3–computer math	1.7	0.0	2.7	1.0	0.0	0.0
Level 4–algebra I	2.3	6.0	5.4	0.0	6.3	5.9
Level 5–algebra I (honors)	0.0	0.0	0.0	0.0	0.0	0.0
Level 6–geometry	7.4	22.0	16.2	1.0	25.0	20.6
Level 7–geometry (honors & analytic)	0.0	0.0	0.0	0.0	0.0	0.0
Level 8–algebra II	31.4	26.0	28.4	33.7	28.1	25.0
Level 9–algebra II (honors)	0.0	4.0	0.0	0.0	6.3	2.9
Level 10–trigonometry	54.9	29.0	46.0	61.4	25.0	30.9
Level 11–trig. (honors)	0.0	0.0	0.0	0.0	0.0	0.0
Level 12–calculus	1.7	3.0	1.4	2.0	0.0	4.4
Level 13–AP calculus	0.6	7.0	0.0	1.0	6.3	7.4
Progress (highest math – lowest math)						
Mean	6.73	4.71	6.55	6.86	4.31	4.9
	$t = 8.71$, $df = 273$, $p < .001$					
*Q*1, Mdn, *Q*3	6, 7, 8	4, 4, 6	5, 7, 9	6, 7, 7	2.5, 4, 6	4, 4.5, 6

Note. Source: high school transcripts.

Table C6

High School Math Course-Taking by Tech Prep Status and Panel for Mt. Hood (OR)

	Tech prep	**Non-tech prep**	**Tech prep by panel**			**Non-tech prep by panel**		
Variables	**Total**	**Total**	**'95**	**'96**	**'97**	**'95**	**'96**	**'97**
	n = 246	*n* = 227	*n* = 57	*n* = 94	*n* = 95	*n* = 59	*n* = 83	*n* = 85
Math GPA								
Mean	2.35	2.38	2.2	2.36	2.42	2.38	2.37	2.4
Total semesters								
Mean semesters	5.29	5.73	5.28	5.18	5.39	5.86	5.82	5.55
	$t = -2.95$, $df = 471$, $p = .003$							
Percentage of total by number of semesters								
1–2 semesters	2.0	0.4	1.8	2.1	2.1	0.0	0.0	1.2
3–4 semesters	38.2	25.1	35.1	39.4	39.0	22.0	22.9	29.4
5–6 semesters	35.4	42.7	42.1	37.2	29.5	47.5	41.0	41.2
7–8 semesters	24.0	30.0	21.1	21.3	28.4	28.8	32.5	28.2
More than 8	0.4	1.8	0.0	0.0	1.1	1.7	3.6	0.0
Average percentage of math courses taken by level								
Basic math	36.5	29.3	40.1	41.5	29.3	39.3	25.8	25.8
(Mean semesters)	(1.72)	(1.40)	(1.91)	(1.93)	(1.39)	(1.94)	(1.27)	(1.15)
Regular math	58.4	61.7	56.0	53.2	65.1	54.3	65.6	62.9
(Mean semesters)	(3.24)	(3.71)	(3.12)	(2.90)	(3.64)	(3.45)	(4.01)	(3.59)
AP+ honors	5.1	9.0	4.0	5.2	5.6	6.5	8.5	11.3
(Mean semesters)	(0.34)	(0.62)	(0.25)	(0.36)	(0.37)	(0.47)	(0.53)	(0.81)
	Wilks' Lambda = .982, $F = 4.29$, $df = 2{,}470$, $p = .014$							
Percentage taking 12th-grade math	39.4	48.5	35.1	41.5	40.0	47.5	45.8	51.8
	$\chi^2 = 3.91$, $df = 1$, $p = .048$							
Mean semesters (0s included)	0.65	0.8	0.6	0.67	0.67	0.85	0.73	0.82
Mean semesters (0s excluded)	1.66	1.65	1.70	1.62	1.68	1.79	1.61	1.59

Table C6 (continued)

	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
Variables	**Total**	**Total**	**'95**	**'96**	**'97**	**'95**	**'96**	**'97**
Lowest math								
Mean level	2.52	2.96	2.26	2.47	2.72	2.54	3.06	3.15
	$t = -3.29$, $df = 471$, $p = .001$							
Percentage of total by level								
Level 1–basic math	25.6	17.6	36.8	26.6	17.9	32.2	12.1	12.9
Level 2–pre-algebra	39.8	36.1	35.1	40.4	42.1	30.5	37.4	38.8
Level 3–computer math	2.0	0.0	1.8	0.0	4.2	0.0	0.0	0.0
Level 4–algebra I	26.4	34.4	21.1	28.7	27.4	30.5	38.6	32.9
Level 5–algebra I (honors)	2.4	5.3	1.8	1.1	4.2	1.7	7.2	5.9
Level 6–geometry	3.3	4.4	3.5	3.2	3.2	5.1	4.8	3.5
Level 7–geometry (honors & analytic)	0.4	1.8	0.0	0.0	1.1	0.0	0.0	4.7
Level 8–algebra II	0.0	0.4	0.0	0.0	0.0	0.0	0.0	1.2
Highest math								
Mean level	5.67	6.52	5.32	5.30	6.26	5.76	6.81	6.75
	$t = -3.38$, $df = 471$, $p < .001$			$F = 4.23$, $df = 2{,}243$, $p = .016$				
Percentage of total by level								
Level 1–basic math	4.1	3.1	7.1	4.3	2.1	3.4	3.6	2.4
Level 2–pre-algebra	8.5	9.3	7.1	14.9	3.2	17.0	6.0	7.1
Level 3–computer math	0.8	0.0	0.0	1.1	1.1	0.0	0.0	0.0
Level 4–algebra I	26.8	17.2	28.6	21.3	31.6	17.0	15.7	18.8
Level 5–algebra I (honors)	0.0	0.4	0.0	0.0	0.0	1.7	0.0	0.0
Level 6–geometry	34.2	26.9	39.3	37.2	27.4	32.2	22.9	27.1
Level 7–geometry (honors & analytic)	0.0	0.4	0.0	0.0	0.0	1.7	0.0	0.0
Level 8–algebra II	16.3	20.3	12.5	16.0	19.0	10.2	27.7	20.0
Level 9–algebra II (honors)	0.8	5.3	0.0	2.1	0.0	1.7	9.6	3.5
Level 10–trigonometry	5.3	12.3	3.6	1.1	10.5	11.9	9.6	15.3
Level 11–trig. (honors)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Level 12–calculus	0.8	1.3	0.0	1.1	1.1	1.7	2.4	0.0
Level 13–AP calculus	2.4	3.5	1.8	1.1	4.2	1.7	2.4	5.9
Progress (highest math – lowest math)								
Mean	3.16	3.56	3.05	2.83	3.55	3.22	3.75	3.60
	$t = -2.20$, $df = 471$, $p = .028$			$F = 3.50$, $df = 2{,}243$, $p = .032$				
*Q*1, Mdn, *Q*3	2, 3,4	2, 4, 5	2, 3, 4	1, 2, 4	2, 3, 5	2, 3, 4	2, 4, 5	2, 4, 5

Note. Source: high school transcripts.

Table C7

High School Math Course-Taking by Tech Prep Status and Panel for Guilford County (NC)

	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
Variables	**Total**	**Total**	**'96**	**'97**	**'98**	**'96**	**'97**	**'98**
	$n = 412$	$n = 311$	$n = 99$	$n = 135$	$n = 178$	$n = 99$	$n = 127$	$n = 85$
Math GPA								
Mean	2.21	2.23	2.14	2.25	2.21	2.17	2.24	2.26
Total semesters								
Mean semesters	7.25	7.14	7.12	7.3	7.29	7.15	7.13	7.13
Percentage of total by number of semesters								
1–2 semesters	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3–4 semesters	0.2	1.9	0.0	0.7	0.0	1.0	2.4	2.4
5–6 semesters	40.8	43.1	42.4	38.5	41.6	41.4	44.1	43.5
7–8 semesters	54.6	50.8	57.6	55.6	52.3	54.6	48.8	49.4
More than 8	4.4	4.2	0.0	5.2	6.2	3.0	4.7	4.7
Average percentage of math courses taken by level								
Basic math	8.2	15.8	7.3	7.9	8.8	9.0	17.1	21.8
(Mean semesters)	(0.60)	(1.10)	(0.53)	(0.63)	(0.63)	(0.63)	(1.23)	(1.46)
Regular math	69.0	58.7	60.0	69.1	74.0	56.9	58.9	60.5
(Mean semesters)	(4.92)	(4.11)	(4.17)	(4.96)	(5.32)	(4.02)	(4.09)	(4.23)
AP+ honors	22.8	25.5	32.7	23.0	17.2	34.1	24.1	17.7
(Mean semesters)	(1.72)	(1.93)	(2.42)	(1.72)	(1.34)	(2.51)	(1.81)	(1.44)
	Wilks' Lambda = .963, F = 13.8, df = 2,720, p < .001		Wilks' Lambda = .962, F = 3.99, df =4,816, p = .003			Wilks' Lambda = .951, F = 3.91, df = 4, 614, p = .004		
Percentage taking 12th-grade math	69.2	72.4	68.7	66.7	71.4	77.8	67.7	72.9
Mean semesters (0s included)	1.43	1.5	1.43	1.38	1.47	1.6	1.42	1.53
Mean semesters (0s excluded)	2.07	2.08	2.09	2.07	2.06	2.05	2.09	2.10

Table C7 (continued)

	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
Variables	**Total**	**Total**	**'96**	**'97**	**'98**	**'96**	**'97**	**'98**
	$n = 412$	$n = 311$	$n = 99$	$n = 135$	$n = 178$	$n = 99$	$n = 127$	$n = 85$
Lowest math								
Mean Level	4.64	4.36	4.64	4.64	4.65	4.68	4.31	4.08
	$y = 2.09$, $df = 621$, $p = .034$							
Percentage of total by level								
Level 1–basic math	0.5	3.9	1.0	0.7	0.0	1.0	2.4	9.4
Level 2–pre-algebra	18.0	24.1	19.2	19.3	16.3	19.2	29.1	22.4
Level 3–computer math								
Level 4–algebra I	31.6	25.4	23.2	23.7	42.1	23.2	22.1	32.9
Level 5–algebra I (honors)	15.8	15.8	27.3	25.2	2.3	27.3	15.8	2.4
Level 6–geometry	16.8	12.5	10.1	13.3	23.0	7.1	11.8	20.0
Level 7–geometry (honors & analytic)	17.5	18.0	19.2	17.8	16.3	21.2	18.9	12.9
Level 8–algebra II	0.0	0.3	0.0	0.0	0.0	1.0	0.0	0.0
Highest math								
Mean level	9.35	9.01	9.21	9.27	9.49	9.30	8.92	8.79
	$t = 2.09$, $df = 530$, $p = .037$							
Percentage of total by level								
Level 1–basic math	0.0	1.6	0.0	0.0	0.0	0.0	1.6	3.5
Level 2–pre-algebra	0.0	1.9	0.0	0.0	0.0	0.0	1.6	4.7
Level 3–computer math	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Level 4–algebra I	0.0	1.3	0.0	0.0	0.0	1.0	1.6	1.2
Level 5–algebra I (honors)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Level 6–geometry	4.4	8.4	5.1	0.7	6.7	8.1	7.1	10.6
Level 7–geometry (honors & analytic)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Level 8–algebra II	44.2	39.2	48.5	51.1	36.5	37.4	45.7	31.8
Level 9–algebra II (honors)	1.0	1.0	1.0	1.5	0.6	2.0	0.8	0.0
Level 10–trigonometry	32.0	24.1	27.3	31.9	34.8	32.3	18.9	22.4
Level 11–trig. (honors)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Level 12–calculus	13.4	16.4	15.2	10.4	14.6	12.1	19.7	16.5
Level 13–AP calculus	5.1	6.1	3.0	4.4	6.7	7.1	3.2	9.4
Progress (highest math – lowest math)								
Mean	4.71	4.64	4.58	4.63	4.84	4.63	4.61	4.71
*Q*1, Mdn, *Q*3	4, 4, 6	4, 5, 6	4, 4, 6	3, 4, 6	4, 4, 6	3, 5, 6	3, 5, 6	4, 5, 6

Note. *Source:* high school transcripts.

Table C8

High School Math Course-Taking by Tech Prep Status and Panel for San Mateo (CA)

	Tech prep	**Non-tech prep**	**Tech prep by panel**			**Non-tech prep by panel**		
Variables	**Total**	**Total**	**'95**	**'96**	**'97**	**'95**	**'96**	**'97**
	n = 314	*n* = 306	*n* = 76	*n* = 119	*n* = 119	*n* = 74	*n* = 116	*n* = 116
Math GPA								
Mean	2.71	2.7	2.65	2.71	2.75	2.59	2.74	2.74
Total semesters								
Mean semesters	6.64	6.74	6.49	6.64	6.74	6.43	6.93	6.74
Percentage of total by number of semesters								
1–2 semesters	1.0	1.0	1.3	1.7	0.0	1.4	0.9	0.9
3–4 semesters	9.2	9.8	11.8	9.2	7.6	13.5	7.8	9.5
5–6 semesters	39.8	36.6	44.7	35.3	41.5	40.5	31.9	38.8
7–8 semesters	44.3	43.5	36.8	49.6	43.7	40.5	50.9	37.9
More than 8	5.7	9.2	5.3	4.2	7.6	4.1	8.6	12.9
Average percentage of math courses taken by level								
Basic math	23.3	30.2	16.6	29.4	21.4	23.2	34.6	30.2
(Mean semesters)	(1.42)	(1.83)	(0.89)	(1.82)	(1.34)	(1.26)	(2.26)	(1.76)
Regular math	70.5	62.9	79.0	65.5	70.0	71.9	58.1	62.0
(Mean semesters)	(4.73)	(4.36)	(5.24)	(4.40)	(4.72)	(4.80)	(4.08)	(4.36)
AP+ honors	6.3	6.9	4.5	5.1	8.6	4.9	7.3	7.8
(Mean semesters)	(0.50)	(0.55)	(0.36)	(0.41)	(0.67)	(0.38)	(0.59)	(0.61)
	Wilks' Lambda = .987, *F* = 4.2, *df* = 2,617, *p* = .015		Wilks' Lambda = .954, *F* = 3.70, *df* = 4,620, *p* = .005					
Percentage taking 12th-grade math	53.5	61.1	47.4	53.8	57.1	59.5	57.8	65.5
Mean semesters (0s included)	0.96	1.1	0.86	1.03	0.97	1.04	1.16	1.09
Mean semesters (0s excluded)	1.80	1.81	1.81	1.79	1.80	1.75	1.78	1.88

Table C8 (continued)

	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
Variables	**Total**	**Total**	**'95**	**'96**	**'97**	**'95**	**'96**	**'97**
Lowest math								
Mean level	3.24	2.99	3.49	2.97	3.36	3.19	2.83	3.03
Percentage of total by level								
Level 1–basic math	24.5	33.0	14.5	31.1	24.4	29.7	37.1	31.0
Level 2–pre-algebra	19.4	19.3	15.8	22.7	18.5	9.5	22.4	22.4
Level 3–computer math								
Level 4–algebra I	40.8	32.0	59.2	30.3	39.5	50.0	22.4	30.2
Level 5–algebra I (honors)	0.3	0.3	1.3	0.0	0.0	0.0	0.9	0.0
Level 6–geometry	8.6	9.8	5.3	12.6	6.7	5.4	13.8	8.6
Level 7–geometry (honors & analytic)	6.4	5.2	4.0	3.4	10.9	5.4	3.5	6.9
Level 8–algebra II	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.9
Highest math								
Mean level	8.10	7.84	8.07	7.89	8.32	7.65	7.86	7.93
Percentage of total by level								
Level 1–basic math	2.6	8.5	1.3	1.7	4.2	9.5	8.6	7.8
Level 2–pre-algebra	4.5	3.9	2.6	7.6	2.5	1.4	6.0	3.5
Level 3–computer math			0.0	0.0	0.0	0.0	0.0	0.0
Level 4–algebra I	8.0	9.8	9.2	9.2	5.9	9.5	12.1	7.8
Level 5–algebra I (honors)	0.3		0.0	0.0	0.8	0.0	0.0	0.0
Level 6–geometry	14.7	10.5	15.8	16.8	11.8	12.2	6.9	12.9
Level 7–geometry (honors & analytic)	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.9
Level 8–algebra II	29.9	25.2	34.2	26.9	30.3	31.1	21.6	25.0
Level 9–algebra II (honors)	1.9	2.0	1.3	2.5	1.7	1.4	1.7	2.6
Level 10–trigonometry	24.8	23.9	25.0	20.2	29.4	24.3	23.3	24.1
Level 11–trig. (honors)			0.0	0.0	0.0	0.0	0.0	0.0
Level 12–calculus	2.2	2.6	4.0	1.7	1.7	2.7	2.6	2.6
Level 13–AP calculus	11.2	13.4	6.6	13.5	11.8	8.1	17.2	12.9
Progress (highest math – lowest math)								
Mean	4.85	4.84	4.58	4.92	4.96	4.46	5.03	4.90
*Q*1, Mdn, *Q*3	4, 5, 6	3, 5, 6	4, 4, 6	4, 5, 7	4, 5, 6	3, 4, 6	3, 6, 7	3.5,5,6

Note. Source: high school transcripts.

Appendix D

High School Science Course-Taking

Table D1

High School Science Course-Taking by Tech Prep Status and Panel for East-Central Illinois (IL)

	Tech prep	Non-tech prep	Tech prep by panel		Non-tech prep by panel	
Variables	**Total** *n* = 285	**Total** *n* = 257	**'96** *n* = 126	**'97** *n* = 159	**'96** *n* = 114	**'97** *n* = 143
Science GPA						
Mean	2.16	2.33	2.19	2.13	2.29	2.37
	t = -2.98, *df* = 540, *p* = .003					
Total semesters						
Mean semesters	4.86	5.36	5.09	4.68	5.32	5.4
	t = -3.24, *df* = 540, *p* = .001		*t* = 1.97, *df* = 283, *p* = .049			
Percentage of total by number of semesters						
1–2 semesters	13.7	7.8	12.7	14.5	8.8	7.0
3–4 semesters	37.2	34.2	31.0	42.1	35.1	33.6
5–6 semesters	37.2	36.2	39.7	35.2	32.5	39.2
7–8 semesters	10.9	19.1	15.9	6.9	21.9	16.8
More than 8	1.1	2.7	0.8	1.3	1.8	3.5
Percentage taking 12th-grade science	25.6	31.1	28.6	23.3	33.3	29.4
Mean semesters (0s included)	0.49	0.67	0.57	0.43	0.71	0.64
	t = -2.04, *df* =4 99, *p* = .042					
Mean Semesters (0s excluded)	1.93	2.15	2.00	1.86	2.13	2.17
	t = -2.05, *df* = 149, *p* = .042					
Average percentage of science courses taken by level						
Level 1–general science	10.0	10.9	13.0	7.5	15.0	7.7
(Mean semesters)	(0.4)	(0.42)	(0.5)	(0.31)	(0.53)	(0.33)
Level 2–basic biology/chemistry	9.8	6.6	8.5	10.9	7.0	6.3
(Mean semesters)	(0.47)	(0.32)	(0.44)	(0.5)	(0.35)	(0.29)
Level 3–regular science	62.5	61.2	61.7	63.1	59.1	62.9
(Mean semesters)	(2.93)	(3.23)	(3.1)	(2.81)	(3.19)	(3.26)
Level 4–regular physics	1.5	2.2	2.2	1.0	2.0	2.4
(Mean semesters)	(0.12)	(0.17)	(0.17)	(0.08)	(0.15)	(0.19)
Level 5–honors science Except physics	16.3	19.1	14.6	17.6	17.0	20.8
(Mean semesters)	(0.94)	(1.23)	(0.88)	(0.99)	(1.11)	(1.32)
Level 6–AP physics & honors	0.0	0.0	0.0	0.0	0.0	0.0
(Mean semesters)	(0)	(0)	(0)	(0)	(0)	(0)

Note. Source: high school transcripts.

Table D2

High School Science Course-Taking by Tech Prep Status and Panel for Metro (HS 601)

	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
Variables	**Total** $n = 156$	**Total** $n = 149$	**'95** $n = 43$	**'96** $n = 67$	**'97** $n = 46$	**'95** $n = 45$	**'96** $n = 65$	**'97** $n = 39$
Science GPA								
Mean	2.28	2.21	2.32	2.32	2.18	2.28	2.12	2.28
Total semesters								
Mean semesters	3.97	4.28	3.7	3.75	4.53	4.26	4.12	
	$t = -2.35$, $df = 303$, $p = .019$		$F = 7.93$, $df = 2{,}153$, $p < .001$					
Percentage of total by number of semesters								
1–2 semesters	10.3	6.0	16.3	13.4	0.0	4.4	7.7	
3–4 semesters	37.8	36.7	39.5	37.3	37.0	40.0	40.0	
5–6 semesters	48.7	53.3	41.9	49.3	54.4	48.9	52.3	
7–8 semesters	1.9	2.7	2.3	0.0	4.4	4.4	0.0	
More than 8	1.3	1.3	0.0	0.0	4.4	2.2	0.0	
Percentage taking 12th-grade science	10.3	10.7	7.0	4.5	21.7	8.9	7.7	17.5
			$\chi^2 = 9.35$, $df = 1$, $p = .002$					
Mean semesters (0s included)	0.17	0.15	0.14	0.06	0.37	0.16	0.08	0.6
			$F = 4.31$, $df = 2, 153$, $p = .015$					
Mean semesters (0s excluded)	1.69	1.44	2.00	1.33	1.70	1.75	1.00	2.08

Table D2 (continued)

	Tech prep	**Non-tech prep**	**Tech prep by panel**			**Non-tech prep by panel**		
Variables	**Total**	**Total**	**’95**	**’96**	**’97**	**’95**	**’96**	**’97**
Average percentage of science courses taken by level								
Level 1–general science	8.9	7.5	8.3	9.8	8.1	9.1	5.9	8.2
(Mean semesters)	(0.35)	(0.32)	(0.3)	(0.37)	(0.36)	(0.37)	(0.25)	(0.37)
Level 2–basic biology/chemistry	10.0	9.2	0.7	13.7	13.2	3.9	9.3	15.2
(Mean semesters)	(0.39)	(0.43)	(0.05)	(0.49)	(0.57)	(0.2)	(0.43)	(0.69)
Level 3–regular science	65.3	75.0	71.6	65.8	58.8	80.8	78.5	62.7
(Mean semesters)	(2.53)	(3.13)	(2.53)	(2.42)	(2.67)	(3.36)	(3.15)	(2.82)
Level 4–regular physics	15.8	8.3	19.4	10.7	19.9	6.2	6.3	13.9
(Mean semesters)	(0.71)	(0.41)	(0.81)	(0.48)	(0.93)	(0.33)	(0.29)	(0.69)
Level 5–honors science except physics	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Mean semesters)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Level 6–AP physics & honors	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Mean semesters)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
	Wilks' Lambda = .950, $F = 5.29$, $df = 3{,}301$, $p < .001$		Wilks' Lambda = .882, $F = 3.25$, $df = 6{,}302$, $p = .004$			Wilks' Lambda = .869, $F = 3.49$, $df = 6{,}288$, $p = .002$		

Note. The 1995 panel was combined with the 1996 panel for the χ^2 test. Source: high school transcripts.

Table D3

High School Science Course-Taking by Tech Prep Status and Panel for Metro (HS 602)

Variables	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
	Total	**Total**	**'95**	**'96**	**'97**	**'95**	**'96**	**'97**
	$n = 142$	$n = 158$	$n = 36$	$n = 26$	$n = 80$	$n = 57$	$n = 25$	$n = 76$
Science GPA								
Mean	2.26	2.18	2.09	2.25	2.34	2.08	2.2	2.24
			$F = 6.39, df = 2, 139, p = .002$					
Total semesters								
Mean semesters	13.8	10.33	12.25	12.23	15.03	8.82	11.48	11.09
	$t = 6.66, df = 298, p < .001$		$F = 8.54, df = 2{,}139, p < .001$			$F = 4.60, df = 2{,}155, p = .011$		
Percentage of total by number of semesters								
1–2 semesters	1.4	0.6	5.6	0.0	0.0	0.0	0.0	1.3
3–4 semesters	0.7	7.6	0.0	0.0	1.3	15.8	4.0	2.6
5–6 semesters	4.2	15.8	8.3	3.9	2.5	28.1	4.0	10.5
7–8 semesters	4.9	18.4	5.6	7.7	3.8	10.5	36.0	18.4
More than 8	88.7	57.6	80.6	88.5	92.5	45.6	56.0	67.1
Percentage taking 12th-grade science	79.6	35.4	83.3	88.5	75.0	26.3	48.0	38.2
	$\chi^2 = 59.22, df = 1, p < .001$							
Mean semesters (0s included)	2.75	1.01	3.53	2.85	2.36	0.91	1.4	0.6
	$t = 7.76, df = 276, p < .001$		$F = 4.09, df = 2{,}139, p = .019$					
Mean semesters (0s excluded)	3.45	2.86	4.23	3.22	3.15	3.47	2.92	2.08
	$t = 2.06, df = 167, p = .041$		$F = 4.40, df = 2{,}110, p = .015$					

Table D3 (continued)

	Tech prep	**Non-tech prep**	**Tech prep by panel**			**Non-tech prep by panel**		
Variables	**Total**	**Total**	**’95**	**’96**	**’97**	**’95**	**’96**	**’97**
Average percentage of science courses taken by level								
Level 1–general science	0.0	0.3	0.0	0.0	0.0	0.0	0.3	0.6
(Mean semesters)	(0)	(0.04)	(0)	(0)	(0)	(0)	(0.04)	(0.07)
Level 2–basic biology/chemistry	5.1	5.9	0.0	2.4	8.3	3.0	4.5	8.6
(Mean semesters)	(0.8)	(0.74)	(0)	(0.31)	(1.31)	(0.33)	(0.56)	(1.11)
Level 3–regular science	78.6	84.5	92.2	92.9	67.8	91.2	83.7	79.7
(Mean semesters)	(10.42)	(8.15)	(11)	(11.27)	(9.89)	(7.74)	(9)	(8.17)
Level 4–regular physics	10.7	5.5	7.5	4.8	14.1	4.2	7.7	5.8
(Mean semesters)	(1.7)	(0.8)	(1.22)	(0.65)	(2.25)	(0.56)	(1.12)	(0.88)
Level 5–honors science except physics	5.6	3.7	0.4	0.0	9.8	1.6	3.8	5.3
(Mean semesters)	(0.89)	(0.61)	(0.03)	(0)	(1.58)	(0.19)	(0.76)	(0.87)
Level 6–AP physics & honors	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Mean semesters)	(0)	(0)	(0	(0)	(0)	(0)	(0)	(0)
	Wilks’ Lambda = .929, $F = 5.60$, $df = 4,295$, $p < .001$		Wilks’ Lambda = .409, $F = 25.76$, $df = 6,274$, $p < .001$			Wilks’ Lambda = .874, $F = 2.64$, $df = 8,304$, $p = .008$		

Note. Source: high school transcripts.

Table D4

High School Science Course-Taking by Tech Prep Status and Panel for Hillsborough (FL)

	Tech prep	**Non-tech prep**	**Tech prep by panel**			**Non-tech prep by panel**		
Variables	**Total**	**Total**	**'95**	**'96**	**'97**	**'95**	**'96**	**'97**
	n = 298	*n* = 296	*n* = 46	*n* = 103	*n* = 149	*n* = 44	*n* = 104	*n* = 148
Science GPA								
Mean	2.8	2.78	2.89	2.73	2.82	2.81	2.83	2.74
Total semesters								
Mean semesters	6.26	7.25	6.13	6.19	6.34	7.34	7.28	7.2
	$t = -9.09$, $df = 512$, $p < .001$							
Percentage of total by number of semesters								
1–2 semesters	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3–4 semesters	5.0	1.4	10.9	2.9	4.7	2.3	1.0	1.4
5–6 semesters	74.5	44.9	71.7	82.5	69.8	40.9	43.3	47.3
7–8 semesters	17.8	39.5	13.0	13.6	22.2	40.9	41.4	37.8
More than 8	2.7	14.2	4.4	1.0	3.4	15.9	14.4	13.5
Percentage taking 12th-grade science	34.6	54.7	32.6	28.2	39.6	47.7	61.5	52.0
	$\chi^2 = 24.44$, $df = 1$, $p < .001$							
Mean semesters (0s included)	0.66	1.20	0.67	0.52	0.76	1.02	1.32	1.16
	$t = -5.71$, $df = 545$, $p < .001$							
Mean semesters (0s included)	1.92	2.19	2.07	1.86	1.92	2.14	2.14	2.23
	$t = -3.03$, $df = 254$, $p = .003$							

Table D4 (continued)

	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
Variables	**Total**	**Total**	**'95**	**'96**	**'97**	**'95**	**'96**	**'97**
Average percent of science courses taken by level								
Level 1–general science	5.7	1.7	6.4	7.2	4.4	3.0	2.3	0.8
(Mean semesters)	(0.35)	(0.1)	(0.43)	(0.44)	(0.27)	(0.18)	(0.14)	(0.05)
Level 2–basic biology/chemistry	0.4	0.2	0.5	0.3	0.5	0.4	0.1	0.1
(Mean semesters)	(0.03)	(0.01)	(0.04)	(0.02)	(0.03)	(0.02)	(0.01)	(0.01)
Level 3–regular science	75.3	60.0	75.0	78.6	73.1	52.5	58.2	63.5
(Mean semesters)	(4.66)	(4.17)	(4.54)	(4.83)	(4.58)	(3.59)	(4.01)	(4.46)
Level 4–regular physics	0.9	3.5	0.5	0.8	1.0	1.0	4.4	3.6
(Mean semesters)	(0.07)	(0.3)	(0.04)	(0.06)	(0.08)	(0.09)	(0.37)	(0.32)
Level 5–honors science except physics	17.2	29.8	16.0	13.0	20.5	34.6	29.4	28.6
(Mean semesters)	(1.11)	(2.26)	(0.96)	(0.83)	(1.34)	(2.72)	(2.28)	(2.11)
Level 6–AP physics & honors	0.6	4.9	1.5	0.1	0.6	8.5	5.6	3.4
(Mean semesters)	(0.04)	(0.4)	(0.11)	(0.01)	(0.04)	(0.72)	(0.47)	(0.26)
	Wilks' Lambda = .863 *F* = 18.64, *df* = 5,588, *p* < .001							

Note. Source: high school transcripts.

Table D5

High School Science Course-Taking by Tech Prep Status and Panel for Golden Crescent (TX)

	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
Variables	**Total**	**Total**	**'95**	**'96**	**'97**	**'95**	**'96**	**'97**
	n = 295	*n* = 286	*n* = 49	*n* = 106	*n* = 140	*n* = 47	*n* = 104	*n* = 135
Science GPA								
Mean	2.65	2.69	2.68	2.74	2.57	2.92	2.67	2.63
Total semesters								
Mean semesters	5.5	5.53	5.06	5.77	5.44	5.38	5.66	5.48
Percentage of total by number of semesters								
1–2 semesters	1.7	2.8	10.2	0.0	0.0	8.5	2.9	0.7
3–4 semesters	40.0	38.5	42.9	38.7	40.0	27.7	38.5	42.2
5–6 semesters	40.7	37.8	32.7	38.7	45.0	48.9	33.7	37.0
7–8 semesters	12.5	15.4	10.2	13.2	12.9	12.8	17.3	14.8
More than 8	5.1	5.6	4.1	9.4	2.1	2.1	7.7	5.2
Percentage taking 12th-grade science	26.1	32.2	34.7	26.4	22.9	38.3	33.7	28.9
Mean semesters (0s included)	0.53	0.67	0.71	0.54	0.46	0.85	0.68	0.6
Mean semesters (0s excluded)	2.04	2.09	2.06	2.04	2.03	2.22	2.03	2.08
Average percentage of science courses taken by level								
Level 1–general science	0.2	1.7	1.0	0.0	0.0	7.2	1.4	0.0
(Mean semesters)	(0.01)	(0.06)	(0.04)	(0)	(0)	(0.21)	(0.06)	(0)
Level 2–basic biology/chemistry	0.8	1.0	0.0	2.3	0.0	0.9	2.4	0.0
(Mean semesters)	(0.04)	(0.05)	(0)	(0.11)	(0)	(0.04)	(0.12)	(0)
Level 3–regular science	80.5	78.0	79.5	81.3	80.2	67.3	78.4	81.6
(Mean semesters)	(4.17)	(4.05)	(3.94)	(4.37)	(4.11)	(3.51)	(4.21)	(4.12)
Level 4–regular physics	0.7	0.7	0.5	1.0	0.5	1.2	1.0	0.3
(Mean semesters)	(0.07)	(0.06)	(0.08)	(0.09)	(0.04)	(0.09)	(0.1)	(0.03)
Level 5–honors science except physics	16.9	15.7	18.3	14.1	18.5	21.8	14.7	14.4
(Mean semesters)	(1.13)	(1.08)	(0.96)	(1.08)	(1.23)	(1.36)	(1.01)	(1.04)
Level 6–AP physics & honors	1.0	2.8	0.7	1.3	0.9	1.6	2.2	3.7
(Mean semesters)	(0.08)	(0.23)	(0.04)	(0.11)	(0.06)	(0.17)	(0.17)	(0.30)
	Wilks' Lambda = .969, *F* = 3.67, *df* = 5,575, *p* = .003		Wilks' Lambda = .937, *F* = 1.92, *df* = 10,576, *p* = .040			Wilks' Lambda = .888, *F* = 3.43, *df* = 10,558, *p* < .001		

Note. Source: high school transcripts.

Table D6

High School Science Course-Taking by Tech Prep Status and Panel for Miami Valley (OH)

	Tech prep	Non-tech prep	Tech prep by panel		Non-tech prep by panel	
Variables	**Total**	**Total**	**'96**	**'97**	**'96**	**'97**
	$n = 175$	$n = 100$	$n = 74$	$n = 101$	$n = 32$	$n = 68$
Science GPA						
Mean	2.58	2.34	2.64	2.54	2.43	2.3
	$t = 2.89, df = 273, p = .0041$					
Total semesters						
Mean semesters	7.78	6.48	8.01	7.6	6.28	6.57
	$t = 5.53, df = 273, p < .001$					
Percentage of total by number of semesters						
1–2 semesters	0.6	2.0	1.4	0.0	0.0	2.9
3–4 semesters	5.7	18.0	4.1	6.9	21.9	16.2
5–6 semesters	20.0	45.0	13.5	24.8	43.8	45.6
7–8 semesters	46.9	23.0	50.0	44.6	31.3	19.1
More than 8	26.9	12.0	31.1	23.8	3.1	16.2
Percentage taking 12th-grade science	84.6	44.0	89.2	81.2	40.6	45.6
	$\chi^2 = 49.7087, df = 1, p < .001$					
Mean semesters (0s included)	1.81	1.04	2.09	1.6	0.84	1.13
	$t = 5.16, df = 157, p < .001$		$t = 3.53, df = 173, p < .001$			
Mean semesters (0s excluded)	2.14	2.36	2.35	1.98	2.08	2.48
			$t = 4.16, df = 146, p < .001$			

Table D6 (continued)

	Tech prep	Non-tech prep	Tech prep by panel		Non-tech prep by panel	
Variables	**Total**	**Total**	**'96**	**'97**	**'96**	**'97**
Average percentage of science courses taken by level						
Level 1–general science	16.5	9.0	19.5	14.3	6.3	10.3
(Mean semesters)	(1.13)	(0.36)	(1.34)	(0.98)	(0.25)	(0.41)
Level 2–basic biology/chemistry	12.4	5.3	19.4	7.2	7.8	4.0
(Mean semesters)	(1)	(0.3)	(1.58)	(0.57)	(0.44)	(0.24)
Level 3–regular science	39.9	54.2	30.1	47.1	61.3	50. 8
(Mean semesters)	(3.08)	(3.45)	(2.5)	(3.51)	(3.78)	(3.29)
Level 4–regular physics	6.1	7.2	3.0	8.4	8.8	6.5
(Mean semesters)	(0.48)	(0.56)	(0.19)	(0.69)	(0.69)	(0.5)
Level 5–honors science except physics	24.8	22.1	27.9	22.5	13.5	26.1
(Mean semesters)	(2.05)	(1.61)	(2.39)	(1.8)	(0.94)	(1.93)
Level 6–AP physics & honors	0.3	2.3	0.1	0.5	2.4	2.3
(Mean semesters)	(0.03)	(0.2)	(0.01)	(0.04)	(0.19)	(0.21)
	Wilks' Lambda = .837, $F = 10.48$, $df = 5,269$, $p < .001$		Wilks' Lambda = .716, $F = 13.42$, $df = 5,169$, $p < .001$		Wilks' Lambda = .833, $F = 3.76$, $df = 5,94$, $p = .004$	

Note. Source: high school transcripts.

Table D7

High School Science Course-Taking by Tech Prep Status and Panel for Mt. Hood (OR)

	Tech prep	**Non-tech prep**	**Tech prep by panel**			**Non-tech prep by panel**		
Variables	**Total**	**Total**	**’95**	**’96**	**’97**	**’95**	**’96**	**’97**
	$n = 246$	$n = 225$	$n = 57$	$n = 94$	$n = 95$	$n = 59$	$n = 83$	$n = 83$
Science GPA								
Mean	2.43	2.53	2.29	2.42	2.53	2.4	2.59	2.57
Total semesters								
Mean semesters	4.71	5.58	4.34	4.62	5.01	5.43	5.59	5.7
	$t = -5.25$, $df = 405$, $p < .001$		$F = 3.79$, $df = 2, 243$, $p = .024$					
Percentage of total by number of semesters								
1–2 semesters	3.3	0.0	3.5	6.4	0.0	0.0	0.0	2.4
3–4 semesters	58.5	44.0	70.2	52.1	57.9	45.8	41.0	42.4
5–6 semesters	27.2	28.0	21.1	31.9	26.3	32.2	27.7	27.1
7–8 semesters	9.8	20.0	5.3	8.5	13.7	13.6	25.3	18.8
More than 8	1.2	8.0	0.0	1.1	2.1	8.5	6.0	9.4
Percentage taking 12th-grade science	27.6	45.4	22.8	30.9	27.4	35.6	56.6	41.2
	$\chi^2 = 16.08$, $df = 1$, $p < .001$					$\chi^2 = 7.12$, $df = 2$, $p = .028$		
Mean semesters (0s included)	0.49	0.83	0.35	0.52	0.54	0.75	1.01	0.71
	$t = -3.79$, $df = 433$, $p < .001$							
Mean semesters (0s excluded)	1.76	1.83	1.54	1.69	1.96	2.10	1.79	1.71

Table D7 (continued)

	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
Variables	**Total**	**Total**	**'95**	**'96**	**'97**	**'95**	**'96**	**'97**
Average percentage of science courses taken by level								
Level 1–general science	14.9	11.2	21.9	17.4	8.2	15.1	12.6	7.1
(Mean semesters)	(0.63)	(0.5)	(0.83)	(0.79)	(0.34)	(0.68)	(0.57)	(0.31)
Level 2–basic biology/chemistry	5.0	7.3	9.4	4.3	3.0	9.0	10.1	3.5
(Mean semesters)	(0.28)	(0.48)	(0.49)	(0.23)	(0.2)	(0.58)	(0.63)	(0.28)
Level 3–regular science	71.6	66.8	65.0	68.7	78.4	64.7	60.0	75.1
(Mean semesters)	(3.29)	(3.5)	(2.78)	(3.07)	(3.82)	(3.31)	(3.18)	(3.96)
Level 4–regular physics	3.3	5.6	2.2	4.5	2.8	5.7	7.4	3.7
(Mean semesters)	(0.2)	(0.4)	(0.11)	(0.25)	(0.2)	(0.39)	(0.5)	(0.3)
Level 5–honors science except physics	4.5	8.6	1.1	4.7	6.5	5.1	9.6	10.1
(Mean semesters)	(0.26)	(0.66)	(0.09)	(0.24)	(0.38)	(0.44)	(0.67)	(0.81)
Level 6–AP physics & honors	0.7	0.4	0.4	0.4	1.1	0.4	0.4	0.5
(Mean semesters)	(0.04)	(0.04)	(0.04)	(0.03)	(0.06)	(0.03)	(0.05)	(0.05)
	Wilks' Lambda = .967, $F = 3.21$, $df = 5{,}465$, $p = .007$		Wilks' Lambda = .879, $F = 3.18$, $df = 10{,}478$, $p < .001$			Wilks' Lambda = .889, $F = 2.64$, $df = 10{,}436$, $p = .004$		

Note. Source: high school transcripts.

Table D8

High School Science Course-Taking by Tech Prep Status and Panel for Guilford County (NC)

	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
Variables	**Total**	**Total**	**'96**	**'97**	**'98**	**'96**	**'97**	**'98**
	n = 412	*n* = 311	*n* = 99	*n* = 135	*n* = 178	*n* = 99	*n* = 127	*n* = 85
Science GPA								
Mean	2.46	2.43	2.57	2.48	2.37	2.44	2.5	2.32
			$F = 3.49$, $df = 2, 409$, $p = .032$					
Total semesters								
Mean semesters	6.84	7.13	6.89	6.79	6.87	7.11	7.07	7.22
	$t = -2.45$, $df = 565$, $p = .015$							
Percentage of total by number of semesters								
1–2 semesters	0.0	0.3	0.0	0.0	0.0	0.0	0.8	0.0
3–4 semesters	1.2	2.9	1.0	2.2	0.6	2.0	2.4	4.7
5–6 semesters	60.9	51.5	57.6	63.0	61.2	50.5	54.3	48.2
7–8 semesters	33.5	35.1	38.4	30.4	33.2	38.4	33.1	34.1
More than 8	4.4	10.3	3.0	4.4	5.1	9.1	9.5	12.9
Percentage taking 12th-grade science	45.9	60.8	48.5	43.0	46.6	60.6	56.7	67.1
	$\chi^2 = 15.77$, $df = 1$, $p < .001$							
Mean semesters (0s included)	1.00	1.42	1.01	0.98	1.01	1.36	1.37	1.55
	$t = -4.49$, $df = 627$, $p < .001$							
Mean semesters (0s excluded)	2.18	2.33	2.08	2.28	2.17	2.25	2.42	2.32
	$t = -2.12$, $df = 354$, $p = .035$							

Table D8 (continued)

	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
Variables	**Total**	**Total**	**'96**	**'97**	**'98**	**'96**	**'97**	**'98**
Average percentage of science courses taken by level								
Level 1–general science	0.8	2.9	1.6	0.9	0.3	0.9	2.6	5.6
(Mean semesters)	(0.05)	(0.17)	(0.1)	(0.06)	(0.02)	(0.06)	(0.16)	(0.31)
Level 2–basic biology/chemistry	2.0	2.2	2.2	2.0	1.8	3.0	2.0	1.4
(Mean semesters)	(0.15)	(0.17)	(0.16)	(0.15)	(0.13)	(0.24)	(0.14)	(0.12)
Level 3–regular science	59.5	52.3	50.84	62.3	62.2	47.6	56.0	52.1
(Mean semesters)	(3.93)	(3.56)	(3.43)	(4.07)	(4.1)	(3.21)	(3.81)	(3.58)
Level 4–regular physics	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.0
(Mean semesters)	(0)	(0.01)	(0)	(0)	(0)	(0)	(0.02)	(0)
Level 5–honors science except physics	33.1	37.8	41.77	31.2	29.8	44.5	35.0	34.2
(Mean semesters)	(2.36)	(2.81)	(2.91)	(2.22)	(2.16)	(3.25)	(2.58)	(2.64)
Level 6–AP physics & honors	4.6	4.8	3.6	3.7	5.9	3.9	4.2	6.7
(Mean semesters)	(0.35)	(0.42)	(0.28)	(0.28)	(0.45)	(0.34)	(0.36)	(0.59)
	Wilks' Lambda = .978, $F = 3.29$, $df = 5{,}717$, $p = .006$		Wilks' Lambda = .941, $F = 3.11$, $df = 8{,}812$, $p = .002$			Wilks' Lambda = .938, $F = 1.97$, $df = 10{,}608$, $p = .034$		

Note. Source: high school transcripts.

Table D9
High School Science Course-Taking by Tech Prep Status and Panel for San Mateo (CA)

	Tech prep	**Non-tech prep**	**Tech prep by panel**			**Non-tech prep by panel**		
Variables	**Total**	**Total**	**'95**	**'96**	**'97**	**'95**	**'96**	**'97**
	n = 314	*n* = 306	*n* = 76	*n* = 119	*n* = 119	*n* = 74	*n* = 116	*n* = 116
Science GPA								
Mean	2.8	2.76	2.81	2.79	2.82	2.7	2.8	2.77
Total semesters								
Mean semesters	5.35	5.64	5.14	5.26	5.57	5.44	5.81	5.6
	$t = -2.07$, $df = 618$, $p = .039$							
Percentage of total by number of semesters								
1–2 semesters	4.8	2.3	11.8	0.8	4.2	1.4	0.9	4.3
3–4 semesters	36.0	32.4	31.6	43.7	31.9	39.2	31.0	31.0
5–6 semesters	42.4	41.8	39.5	44.5	41.2	39.2	40.5	43.1
7–8 semesters	13.4	20.3	13.2	7.6	19.3	18.9	24.1	18.1
More than 8	3.5	3.3	4.0	3.4	3.4	1.4	3.5	3.5
Percentage taking 12th-grade science	52.6	61.1	50.0	51.3	55.5	62.2	63.8	57.8
	$\chi^2 = 4.63$, $df = 1$, $p = .031$							
Mean semesters (0s included)	1.04	1.29	1.03	0.96	1.13	1.28	1.4	1.19
	$t = -2.77$, $df = 618$, $p = .006$							
Mean semesters (0s excluded)	1.98	2.11	2.05	1.87	2.03	2.07	2.19	2.08

Table D9 (continued)

	Tech prep	**Non-tech prep**	**Tech prep by panel**			**Non-tech prep by panel**		
Variables	**Total**	**Total**	**'95**	**'96**	**'97**	**'95**	**'96**	**'97**
Average percentage of science courses taken by level								
Level 1–general science	12.0	12.0	7.4	14.6	12.3	9.6	13.7	11.8
(Mean semesters)	(0.53)	(0.57)	(0.32)	(0.65)	(0.55)	(0.46)	(0.66)	(0.56)
Level 2–basic biology/chemistry	20.0	18.0	26.6	18.1	17.7	19.8	16.5	18.4
(Mean semesters)	(0.9)	(0.86)	(1.01)	(0.84)	(0.9)	(0.97)	(0.81)	(0.85)
Level 3–regular science	54.6	53.3	51.8	55.3	55.7	54.8	52.1	53.6
(Mean semesters)	(3)	(3.05)	(2.83)	(2.99)	(3.12)	(2.97)	(3.09)	(3.05)
Level 4–regular physics	9.9	11.8	9.1	9.9	10.4	9.9	12.9	11.8
(Mean semesters)	(0.66)	(0.79)	(0.63)	(0.64)	(0.71)	(0.65)	(0.88)	(0.79)
Level 5–honors science except physics	3.4	4.7	5.1	1.8	3.9	5.9	4.2	4.4
(Mean semesters)	(0.25)	(0.35)	(0.36)	(0.13)	(0.29)	(0.39)	(0.33)	(0.34)
Level 6–AP physics & honors	0.1	0.3	0.0	0.3	0.0	0.0	0.7	0.0
(Mean semesters)	(0.01)	(0.01)	(0)	(0.02)	(0)	(0)	(0.03)	(0)
			Wilks' Lambda = .938, $F = 1.99$, $df = 10{,}614$, $p = .033$					

Note. Source: high school transcripts.

Appendix E

High School English Course-Taking

Table E1

High School English Course-Taking by Tech Prep Status and Panel for East-Central Illinois (IL)

Variables	Tech prep	Non-tech prep	Tech prep by panel		Non-tech prep by panel	
	Total	Total	'96	'97	'96	'97
	$n = 285$	$n = 257$	$n = 126$	$n = 159$	$n = 114$	$n = 143$
English GPA						
Mean	2.36	2.56	2.31	2.39	2.46	2.64
	$t = 3.43$, $df = 540$, $p < .001$				$t = -2.06$, $df = 255$, $p = .04$	
Total semesters						
Mean semesters	7.84	8.15	7.79	7.87	8.11	8.18
	$t = -3.03$, $df = 540$, $p = .003$					
Percentage of total by number of semesters						
1–2 semesters	0.0	0.0	0.0	0.0	0.0	0.0
3–4 semesters	0.0	0.8	0.0	0.0	0.9	0.7
5–6 semesters	17.5	8.6	16.7	18.2	12.3	5.6
7–8 semesters	64.6	66.9	65.9	63.5	60.5	72.0
More than 8	17.9	23.7	17.5	18.2	26.3	21.7
Percentage taking 12th-grade English	91.6	94.2	93.7	89.9	95.6	93.0
Mean semesters (0s included)	2.04	2.14	2.10	1.99	2.24	2.07
Percentage taking basic English	6.3	7.8	12.7	1.3	10.5	5.6
			$\chi^2 = 15.55$, $df = 1$, $p < .001$			
Percentage taking AP & honors English	17.2	26.9	16.7	17.6	18.4	33.6
	$\chi^2 = 7.40$, $df = 1$, $p = .006$				$\chi^2 = 7.41$, $df = 1$, $p = .006$	
Average percentage of English courses taken by level						
Basic	2.5	3.5	5.0	0.5	4.3	2.9
(Mean semesters)	(0.19)	(0.26)	(0.37)	(0.04)	(0.32)	(0.22)
Regular	88.2	81.9	85.7	90.2	85.9	78.8
(Mean semesters)	(6.94)	(6.89)	(6.71)	(7.11)	(7)	(6.44)
College prep	1.3	1.8	1.3	1.2	1.7	1.8
(Mean semesters)	(0.1)	(0.14)	(0.11)	(0.09)	(0.14)	(0.14)
AP and honors	8.0	12.8	7.9	8.1	8.1	16.6
(Mean semesters)	(0.61)	(1.06)	(0.6)	(0.62)	(0.66)	(1.38)
	Wilks' Lambda = .985, $F = 2.66$, $df = 3{,}538$, $p = .048$				Wilks' Lambda = .968, $F = 3.13$, $df = 3{,}281$, $p = .026$	

Note. Source: high school transcripts.

Table E2

High School English Course-Taking by Tech Prep Status and Panel for Metro

	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
Variables	**Total** $n = 298$	**Total** $n = 308$	**'95** $n = 79$	**'96** $n = 93$	**'97** $n = 126$	**'95** $n = 102$	**'96** $n = 90$	**'97** $n = 116$
English GPA								
Mean	2.36	2.33	2.27	2.28	2.48	2.25	2.27	2.46
			$F = 4.62$, $df = 2{,}295$, $p = .011$			$F = 4.58$, $df = 2{,}304$, $p = .011$		
Total semesters								
Mean semesters	9.02	8.92	9.22	8.72	9.12	9.16	8.73	8.87
			$F = 3.68$, $df = 2{,}295$, $p = .027$					
Percentage of total by number of semesters								
1–2 semesters	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3–4 semesters	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5–6 semesters	0.0	1.6	0.0	0.0	0.0	1.0	2.2	1.7
7–8 semesters	49.3	54.2	45.6	64.5	40.5	47.1	66.7	50.9
More than 8	50.7	44.2	54.4	35.5	59.5	52.0	31.1	47.4
Percentage taking 12th-grade English	98.0	96.1	96.2	97.9	99.2	96.1	98.9	94.0
Mean semesters (0s included)	2.16	2.12	2.14	2.14	2.18	2.06	2.14	2.15
Percentage taking basic English	4.0	17.9	2.5	5.4	4.0	9.8	24.4	19.8
	$\chi^2 = 29.460$, $df = 1$, $p < .001$					$\chi^2 = 7.48$, $df = 2$, $p = .024$		
Percentage taking AP & honors English	29.2	24.4	15.2	8.6	53.2	19.6	17.8	33.6
			$\chi^2 = 61.62$, $df = 2$, $p < .001$			$\chi^2 = 8.77$, $df = 2$, $p = .013$		
Average percentage of English courses taken by level								
Basic	1.6	7.9	0.3	1.8	2.2	4.2	9.6	9.7
(Mean semesters)	(0.16)	(0.88)	(0.03)	(0.14)	(0.25)	(0.51)	(1.07)	(1.05)
Regular	83.2	80.2	96.0	96.1	65.8	87.7	82.5	71.9
(Mean semesters)	(7.37)	(6.86)	(8.84)	(8.38)	(5.70)	(7.84)	(6.81)	(6.04)
College prep	—	—	—	—	—	—	—	—
(Mean semesters)	—	—	—	—	—	—	—	—
AP and honors	15.2	11.9	3.7	2.2	32.0	8.1	7.9	18.4
(Mean semesters)	(1.5)	(1.18)	(0.35)	(0.2)	(3.17)	(0.8)	(0.85)	(1.77)
	Wilks' Lambda = .964, $F = 11.42$, $df = 2{,}603$, $p < .001$		Wilks' Lambda = .733, $F = 24.72$, $df = 4{,}588$, $p < .001$			Wilks' Lambda = .937, $F = 5$, $df = 4{,}608$, $p < .001$		

Note. Source: high school transcripts.

Table E3
High School English Course-Taking by Tech Prep Status for Metro—ESL only

Variables	**Total**	**Tech prep**	**Non-tech prep**
	n = 53	*n* = 15	*n* = 38
English GPA			
Mean	2.33	2.6	2.22
Total semesters			
Mean semesters	10.11	9.4	10.4
Percentage of total by number of semesters			
1–2 semesters	0	0.0	0.0
3–4 semesters	0	0.0	0.0
5–6 semesters	0	0.0	0.0
7–8 semesters	58.49	53.3	60.5
More than 8	41.51	46.7	39.5
Percentage taking 12th-grade English	100.0	100.0	100.0
Mean semesters (0s included)	2.42	2.07	2.55
Percentage taking basic English	84.9	73.3	89.5
Percentage taking AP & honors English	3.8	13.3	0.0
Average percentage of English courses taken by level			
Basic	37.4	28.4	40.9
(Mean semesters)	(4.57)	(2.93)	(5.21)
Regular	61.8	68.6	59.1
(Mean semesters)	(5.45)	(6.13)	(5.18)
College prep	—	—	—
(Mean semesters)	—	—	—
AP and honors	0.8	3.0	0.0
(Mean semesters)	(0.09)	(0.33)	(0)

Note. Source: high school transcripts.

Table E4

High School English Course-Taking by Tech Prep Status and Panel for Hillsborough (FL)

	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
Variables	**Total** $n = 297$	**Total** $n = 296$	**'95** $n = 46$	**'96** $n = 102$	**'97** $n = 149$	**'95** $n = 44$	**'96** $n = 104$	**'97** $n = 148$
English GPA								
Mean	2.84	2.89	2.83	2.81	2.34	3.00	2.92	2.83
Total semesters								
Mean semesters	8.59	8.68	8.09	8.87	8.54	8.68	8.81	8.59
			$F = 3.35$, $df = 2{,}294$, $p = .036$					
Percentage of total by number of semesters								
1–2 semesters	0.7	0.3	2.2	0.0	0.7	0.0	0.0	0.7
3–4 semesters	0.7	0.3	0.0	2.0	0.0	0.0	1.0	0.0
5–6 semesters	1.7	1.7	2.2	1.0	2.0	4.6	2.9	0.0
7–8 semesters	65.3	64.2	76.1	57.8	67.1	59.1	57.7	70.3
More than 8	31.7	33.5	19.6	39.2	30.2	36.4	38.5	29.1
Percentage taking 12th-grade English	98.7	100.0	97.8	98.0	99.3	100.0	100.0	100.0
Mean semesters (0s included)	2.29	2.33	2.11	2.30	2.34	2.27	2.27	2.38
Percentage taking basic English	24.2	12.8	21.7	31.4	20.1	20.5	18.3	6.8
	$\chi^2 = 12.76$, $df = 1$, $p < .001$					$\chi^2 = 9.91$, $df = 2$, $p = .007$		
Percentage taking AP & honors English	34.0	60.8	28.3	29.4	38.9	63.6	55.8	63.5
	$\chi^2 = 42.72$ $df = 1$, $p < .001$							
Average percentage of English courses taken by level								
Basic	9.4	4.6	13.5	12.6	6.0	6.9	5.9	3.0
(Mean semesters)	(0.87)	(0.45)	(1.15)	(1.22)	(0.54)	(0.73)	(0.51)	(0.33)
Regular	73.7	59.9	69.0	72.4	76.1	50.4	59.3	63.2
(Mean semesters)	(6.23)	(5.16)	(5.43)	(6.31)	(6.42)	(4.3)	(5.27)	(5.34)
College prep	—	—	—	—	—	—	—	—
(Mean semesters)	—	—	—	—	—	—	—	—
AP and honors	16.9	35.5	17.5	15.1	17.9	42.8	34.8	33.7
(Mean semesters)	(1.49)	(3.07)	(1.5)	(1.34)	(1.58)	(3.66)	(3.03)	(2.93)
	Wilks' Lambda = .921, $F = 25.42$, $df = 2{,}590$ $p < .001$							

Note. Source: High school transcripts.

Table E5

High School English Course-Taking by Tech Prep Status for Hillsborough (FL)—ESL Only

Variables	Total *n* = 59	Tech prep *n* = 31	Non-tech prep *n* = 28
English GPA			
Mean	2.85	2.83	2.88
Total semesters			
Mean semesters	8.39	8.16	8.64
Percentage of total by number of semesters			
1–2 semesters	5.08	6.5	3.6
3–4 semesters	1.69	3.2	0.0
5–6 semesters	3.39	0.0	7.1
7–8 semesters	66.1	71.0	60.7
More than 8	23.73	19.4	28.6
Percentage taking 12th-grade English	100.0	100.0	100.0
Percentage taking basic English	33.9	38.7	28.6
Percentage taking AP & honors English	28.8	22.6	35.7
Average percentage of English courses taken by level			
Basic	21.8	21.9	21.7
(Mean semesters)	(2.25)	(2.10)	(2.43)
Regular	63.5	68.7	57.8
(Mean semesters)	(4.93)	(5.29)	(4.54)
College prep	—	—	—
(Mean semesters)	—	—	—
AP and honors	14.7	9.4	20.6
(Mean semesters)	(1.20)	(0.77)	(1.68)

Note. Source: high school transcripts.

Table E6

High School English Course-Taking by Tech Prep Status and Panel for Golden Crescent (TX)

	Tech prep	**Non-tech prep**	**Tech prep by panel**			**Non-tech prep by panel**		
Variables	**Total**	**Total**	**'95**	**'96**	**'97**	**'95**	**'96**	**'97**
	n = 295	*n* = 286	*n* = 49	*n* = 106	*n* = 140	*n* = 47	*n* = 104	*n* = 135
English GPA								
Mean	2.84	2.88	2.88	2.8	2.86	3.01	2.82	2.89
Total semesters								
Mean semesters	8.25	8.24	7.65	8.22	8.48	8	8.16	8.38
			$F = 7.01$, $df = 2{,}292$, $p = .001$					
Percentage of total by number of semesters								
1–2 semesters	0.0	0.7	0.0	0.0	0.0	0.0	1.9	0.0
3–4 semesters	0.7	0.7	4.1	0.0	0.0	2.1	1.0	0.0
5–6 semesters	8.1	7.3	20.4	3.8	7.1	17.0	4.8	5.9
7–8 semesters	68.1	67.5	57.1	78.3	64.3	63.8	67.3	68.9
More than 8	23.1	23.8	18.4	17.9	28.6	17.0	25.0	25.2
Percentage taking 12th-grade English	93.2	90.6	95.9	95.3	90.7	93.6	90.4	8963.0
Mean semesters (0s included)	2.05	2.01	2.12	2.00	2.07	2.02	1.98	2.04
Percentage taking basic English	4.8	9.8	14.3	1.9	3.6	12.8	10.6	8.2
	$\chi^2 = 5.51$, $df = 1$, $p = .019$		$\chi^2 = 12.21$, $df = 2$, $p = .002$					
Percentage taking AP & honors English	37.3	38.5	26.5	38.7	40.0	31.9	34.6	43.7
Average percent of English courses taken by level								
Basic	1.6	5.3	4.68	0.7	1.3	8.0	5.0	4.7
(Mean semesters)	(0.15)	(0.42)	(0.43)	(0.08)	(0.11)	(0.51)	(0.41)	(0.39)
Regular	73.2	68.0	78.6	71.4	72.7	70.7	67.7	67.3
(Mean semesters)	(6.02)	(5.67)	(5.84)	(5.88)	(6.2)	(5.83)	(5.57)	(5.69)
College prep	1.3	1.8	1.3	1.2		1.7	1.8	
(Mean semesters)	(0.1)	(0.14)	(0.11)	(0.09)		(0.14)	(0.14)	
AP and honors	25.1	26.7	16.7	27.9	26.0	21.3	27.2	28.1
(Mean semesters)	(2.07)	(2.15)	(1.39)	(2.26)	(2.16)	(1.66)	(2.18)	(2.3)
	Wilks' Lambda = .983, $F = 5.16$, $df = 2{,}578$, $p = .006$		Wilks' Lambda = .962, $F = 2.83$, $df = 4{,}582$, $p = .024$					

Note. Source: high school transcripts.

Table E7

High School English Course-Taking by Tech Prep Status and Panel for Miami Valley (OH)

	Tech prep	**Non-tech prep**	**Tech prep by panel**		**Non-tech prep by panel**	
Variables	**Total** *n* = 175	**Total** 100	**'96** *n* = 74	**'97** *n* = 101	**'96** *n* = 32	**'97** *n* = 68
English GPA						
Mean	2.59	2.7	2.56	2.61	2.7	2.7
Total semesters						
Mean semesters	7.74	7.99	7.66	7.79	7.94	8.01
Percentage of total by number of semesters						
1–2 semesters	0.0	0.0	0.0	0.0	0.0	0.0
3–4 semesters	2.9	1.0	1.4	4.0	3.1	0.0
5–6 semesters	12.0	24.0	17.6	7.9	15.6	27.9
7–8 semesters	69.1	48.0	66.2	71.3	53.1	45.6
More than 8	16.0	27.0	14.9	16.8	28.1	26.5
Percentage taking 12th-grade English	97.1	71.0	100.0	95.1	78.1	67.7
	$\chi^2 = 40.14$, $df = 1$, $p < .001$					
Mean semesters (0s included)	1.94	1.61	1.97	1.91	1.78	1.53
	$t = 2.54$, $df = 109$, $p = .012$					
Percentage taking basic English	20.6	30.0	28.4	14.9	34.4	27.9
			$\chi^2 = 4.78$, $df = 1$, $p < .029$			
Percentage taking AP & honors English	20.0	44.0	23.0	17.8	59.4	36.8
	$\chi^2 = 17.90$, $df = 1$, $p < .001$				$\chi^2 = 4.51$, $df = 1$, $p = .034$	
Average percentage of English courses taken by level						
Basic	4.8	4.8	7.3	2.9	4.7	4.9
(Mean semesters)	(0.36)	(0.38)	(0.54)	(0.23)	(0.34)	(0.4)
Regular	89.7	82.6	86.5	92.0	76.5	85.4
(Mean semesters)	(6.92)	(6.57)	(6.62)	(7.14)	(6.09)	(6.79)
College prep	—	—	—	—	—	—
(Mean semesters)	—	—	—	—	—	—
AP and honors	5.6	12.6	6.2	5.1	18.8	9.7
(Mean semesters)	(0.46)	(1.04)	(0.5)	(0.43)	(1.5)	(0.82)
	Wilks' Lambda = .950, $F = 7.14$, $df = 2,272$, $p = .001$				Wilks' Lambda = .957, $F = 3.91$, $df = 2,172$, $p = .022$	

Note. Source: high school transcripts.

Table E8

High School English Course-Taking by Tech Prep Status and Panel for Mt. Hood (OR)

	Tech prep	**Non-tech prep**	**Tech prep by panel**			**Non-tech prep by panel**		
Variables	**Total** *n* = 246	**Total** *n* = 225	**'95** *n* = 57	**'96** *n* = 94	**'97** *n* = 95	**'95** *n* = 58	**'96** *n* = 83	**'97** *n* = 84
English GPA								
Mean	2.45	2.53	2.4	2.43	2.5	2.42	2.6	2.54
Total semesters								
Mean semesters	8.09	7.86	8.06	8.09	8.11	7.84	7.68	8.06
Percentage of total by number of semesters								
1–2 semesters	0.4	0.4	1.8	0.0	0.0	0.0	0.0	1.2
3–4 semesters	1.2	0.4	0.0	1.1	2.1	1.7	0.0	0.0
5–6 semesters	5.7	7.1	10.5	3.2	5.3	8.6	9.6	3.6
7–8 semesters	78.5	83.6	68.4	85.1	77.9	79.3	86.8	83.3
More than 8	14.2	8.4	19.3	10.6	14.7	10.3	3.6	11.9
Percentage taking 12th-grade English	97.2	98.2	94.7	96.8	99.0	96.6	98.8	98.8
Mean semesters (0s included)	2.20	2.18	2.07	2.22	2.24	2.24	2.08	2.23
Percentage taking basic English	24.4	19.1	19.3	21.3	30.5	19.0	22.9	15.5
Percentage taking AP & honors English	5.3	17.8	7.0	2.1	7.4	19.0	12.1	22.6
	$\chi^2 = 18.37$, $df = 1$, $p < .001$							
Average percentage of English courses taken by level								
Basic	9.5	7.5	9.8	8.0	10.9	11.0	6.2	6.5
(Mean semesters)	(0.90)	(0.62)	(1.00)	(0.74)	(0.99)	(0.93)	(0.46)	(0.57)
Regular	87.2	83.0	87.3	89.9	84.5	78.7	87.8	81.3
(Mean semesters)	(6.92)	(6.48)	(6.79)	(7.17)	(6.74)	(6.14)	(6.73)	(6.46)
College prep	—	—	—	—	—	—	—	—
(Mean semesters)	—	—	—	—	—	—	—	—
AP and honors	3.3	9.5	2.9	2.1	4.7	10.4	6.0	12.3
(Mean semesters)	(0.27)	(0.76)	(0.26)	(0.17)	(0.38)	(0.78)	(0.49)	(1.02)
	Wilks' Lambda = .976, $F = 5.85$, $df = 2{,}468$, $p = .003$							

Note. Source: high school transcripts.

Table E9

High School English Course-Taking by Tech Prep Status and Panel for Guilford County (NC)

	Tech prep	**Non-tech prep**	**Tech prep by panel**			**Non-tech prep by panel**		
Variables	**Total**	**Total**	**'96**	**'97**	**'98**	**'96**	**'97**	**'98**
	n = 412	*n* = 311	*n* = 99	*n* = 135	*n* = 178	*n* = 99	*n* = 127	*n* = 85
English GPA								
Mean	2.54	2.53	2.48	2.61	2.52	2.51	2.6	2.46
Total semesters								
Mean semesters	8.41	8.67	8.27	8.3	8.56	8.73	8.46	8.92
$t = -2.55$, $df = 523$, $p = .011$								
Percentage of total by number of semesters								
1–2 semesters	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3–4 semesters	0.0	0.3	0.0	0.0	0.0	0.0	0.8	0.0
5–6 semesters	0.5	1.9	0.0	0.0	1.1	1.0	1.6	3.5
7–8 semesters	83.3	73.0	88.9	85.2	78.7	75.8	75.6	65.9
More than 8	16.3	24.8	11.1	14.8	20.2	23.2	22.1	30.6
Percentage taking 12th-grade English	100.0	99.0	100.0	100.0	100.0	99.0	100.0	97.7
Mean semesters (0s included)	2.25	2.35	2.18	2.27	2.27	2.41	2.26	2.42
Percentage taking basic English	1.2	7.4	2.0	1.5	0.6	8.1	4.7	10.6
$\chi^2 = 18.19$, $df = 1$, $p < .001$								
Percentage taking AP & honors English	53.9	56.3	53.5	60.0	49.4	62.6	56.7	48.2
Average percentage of English courses taken by level								
Basic	0.4	4.4	0.8	0.4	0.2	2.8	3.0	8.4
(Mean semesters)	(0.03)	(0.39)	(0.06)	(0.03)	(0.02)	(0.28)	(0.24)	(0.75)
Regular	12.6	15.6	17.7	11.4	10.7	16.5	18.0	11.0
(Mean semesters)	(1.11)	(1.44)	(1.46)	(0.96)	(1.02)	(1.54)	(1.57)	(1.13)
College prep	55.5	45.9	49.1	55.9	58.8	42.8	45.6	49.9
(Mean semesters)	(4.54)	(3.82)	(4.00)	(4.59)	(4.81)	(3.56)	(3.78)	(4.19)
AP and honors	31.5	34.1	32.5	32.4	30.3	37.9	33.5	30.6
(Mean semesters)	(2.72)	(3.02)	(2.75)	(2.7)	(2.71)	(3.35)	(2.87)	(2.85)
Wilks' Lambda = .965, $F = 8.59$, $df = 3{,}719$, $p < .001$								

Note. Source: high school transcripts.

Table E10

High School English Course-Taking by Tech Prep Status for Guilford County (NC)—ESL only

Variables	Total	Tech prep	Non-tech prep
	n = 13	*n* = 4	*n* = 9
English GPA			
Mean	3.14	3.5	2.99
Total semesters			
Mean semesters	10.15	9	10.7
Percentage of total by number of semesters			
1–2 semesters	0	0.0	0.0
3–4 semesters	0	0.0	0.0
5–6 semesters	7.69	0.0	11.1
7–8 semesters	38.46	75.0	22.2
More than 8	53.85	25.0	66.7
Percentage taking 12th-grade English	100.0	100.0	100.0
Mean Semesters (0s included)	2.62	2.00	2.89
Percentage taking basic English	69.2	25.0	88.9
Percentage taking AP & honors English	7.7	25.0	0.0
Average percentage of English courses taken by level			
Basic	49.9	8.3	68.3
(Mean semesters)	(5.54)	(1.00)	(7.56)
Regular	27.1	25.0	28.1
(Mean semesters)	(2.46)	(2.00)	(2.67)
College prep	20.5	58.3	3.6
(Mean semesters)	(1.85)	(5.00)	(0.44)
AP and honors	2.56	8.3	0.0
(Mean semesters)	(0.31)	(1)	(0)
		Wilks' Lambda = .275, $F = 7.9$, $df = 3,9$, $p = .007$	

Note. Source: high school transcripts.

Table E11

High School English Course-Taking by Tech Prep Status and Panel for San Mateo (CA)

	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
Variables	**Total** *n* = 314	**Total** *n* = 306	**'95** *n* = 76	**'96** *n* = 119	**'97** *n* = 119	**'95** *n* = 74	**'96** *n* = 116	**'97** *n* = 116
English GPA								
Mean	2.94	3.01	2.92	2.98	2.93	2.93	3.01	3.06
Total semesters								
Mean semesters	8.49	8.75	8.34	8.5	8.58	8.25	8.86	8.96
Percentage of total by number of semesters								
1–2 semesters	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3–4 semesters	0.0	0.3	0.0	0.0	0.0	1.4	0.0	0.0
5–6 semesters	2.2	2.6	4.0	2.5	0.8	1.4	4.3	1.7
7–8 semesters	77.7	64.4	76.3	78.2	78.2	75.7	59.5	62.1
More than 8	20.1	32.7	19.7	19.3	21.0	21.6	36.2	36.2
Percentage taking 12th-grade English	99.0	98.7	97.4	99.2	100.0	98.7	98.3	99.1
Mean semesters (0s included)	2.14	2.33	2.05	2.16	2.17	2.20	2.42	0.02
	t = -3.16, *df* = 521, *p* = .002							
Percentage taking basic English	29.9	33.3	26.3	37.0	25.2	27.0	34.5	36.2
Percentage taking AP & honors English	26.8	32.7	30.3	22.7	28.6	44.6	27.6	30.2
						χ^2 = 6.47, *df* = 2, *p* = .039		
Average percentage of English courses taken by level								
Basic	13.7	14.2	9.6	18.8	11.3	12.0	16.3	13.5
(Mean semesters)	(1.34)	(1.45)	(0.82)	(1.87)	(1.15)	(1.05)	(1.59)	(1.56)
Regular	24.9	29.2	11.3	34.0	24.6	13.7	38.7	29.6
(Mean semesters)	(2.08)	(2.6)	(0.97)	(2.76)	(2.12)	(1.20)	(3.35)	(2.62)
College prep	43.1	35.0	63.7	30.1	42.9	44.4	25.8	38.1
(Mean semesters)	(3.63)	(2.95)	(5.34)	(2.54)	(3.63)	(3.64)	(2.24)	(3.24)
AP and honors	18.3	21.6	15.5	17.2	21.2	29.9	19.1	18.8
(Mean semesters)	(1.43)	(1.8)	(1.21)	(1.33)	(1.68)	(2.36)	(1.7)	(1.54)
			Wilks' Lambda = .891, *F* = 6.11, *df* = 6, 618, *p* < .001			Wilks' Lambda = .915, *F* = 4.55, *df* = 6, 602, *p* < .001		

Note. Source: high school transcripts.

Table E12

High School English Course-Taking by Tech Prep Status for San Mateo (CA)—ESL only

Variables	Total	Tech prep	Non-tech prep
	n = 76	*n* = 38	*n* = 38
English GPA			
Mean	3.07	3.12	3.02
Total semesters			
Mean semesters	10.92	10.68	11.16
Percentage of total by number of semesters			
1–2 semesters	0	0.0	0.0
3–4 semesters	0	0.0	0.0
5–6 semesters	6.58	5.3	7.9
7–8 semesters	31.58	39.5	23.7
More than 8	61.84	55.3	68.4
Percentage taking 12th-grade English	96.1	97.4	94.7
Mean semesters (0s included)	2.14	2.11	2.18
Percentage taking basic English	88.2	89.5	86.8
Percentage taking AP & honors English	4.0	5.3	2.6
Average percentage of English courses taken by level			
Basic	46.7	43.8	49.5
(Mean semesters)	(5.67)	(5.16)	(6.18)
Regular	39.2	40.4	38.0
(Mean semesters)	(3.49)	(3.45)	(3.53)
College prep	11.6	12.7	10.5
(Mean semesters)	(1.53)	(1.76)	(1.29)
AP and honors	2.53	3.1	2.0
(Mean semesters)	(0.24)	(0.32)	(0.16)

Note. Source: high school transcripts.

Appendix F

High School CTE Course-Taking

Table F1

NCES Concentration and Specialization by Tech Prep Status and Consortium

	Total **(*n* = 4426)**		**East-Central Illinois (IL)** **(*n* = 542)**		**Metro** **(*n* = 606)**		**Hillsborough (FL)** **(*n* = 594)**		**Golden Crescent (TX)** **(*n* = 581)**		**Miami Valley (OH)** **(*n* = 275)**		**Mt. Hood (OR)** **(*n* = 484)**		**Guilford County (NC)** **(*n* = 723)**		**San Mateo (CA)** **(*n* = 620)**	
	Tech prep *n* = 2,324	Non-tech prep *n* = 2,102	Tech prep *n* = 285	Non-tech prep *n* = 257	Tech prep *n* = 298	Non-tech prep *n* = 308	Tech prep *n* = 298	Non-tech prep *n* = 296	Tech prep *n* = 295	Non-tech prep *n* = 288	Tech prep *n* = 175	Non-tech prep *n* = 100	Tech prep *n* = 249	Non-tech prep *n* = 236	Tech prep *n* = 412	Non-tech prep *n* = 311	Tech prep *n* = 314	Non-tech prep *n* = 306
Concentration																		
None	911 (39.2)	1,348 (64.1)	158 (55.4)	160 (62.3)	113 (37.9)	92 (29.9)	47 (15.8)	127 (42.9)	154 (52.2)	172 (60.1)	1 (0.6)	84 (84.0)	66 (26.5)	181 (77.0)	103 (25.0)	235 (75.6)	272 (86.6)	293 (95.8)
One area	1,309 (56.3)	710 (33.8)	111 (39.0)	89 (34.6)	184 (61.7)	214 (69.5)	212 (71.1)	160 (54.1)	128 (43.4)	97 (33.9)	167 (95.4)	16 (16.0)	173 (69.5)	53 (22.6)	291 (70.6)	69 (22.2)	42 (13.4)	13 (4.3)
Two areas	101 (4.4)	44 (2.1)	16 (5.6)	8 (3.1)	1 (0.3)	2 (0.7)	36 (12.1)	9 (3.0)	13 (4.4)	17 (5.9)	7 (4.0)	0	10 (4.0)	1 (0.4)	18 (4.4)	7 (2.3)	-	-
Three areas	3 (0.1)	0	-	-	-	-	3 (1.0)	0	-	-	-	-	-	-	-	-	-	-
χ^2* (*p*)	277.21 (< .001)		2.59 (0.11)		4.38 (.036)		52.79 (< .001)		3.71 (.054)		207.41 (< .001)		127.50 (< .001)		182.00 (< .001)		15.97 (< .001)	
Specialization																		
None	1,556 (67.0)	1,747 (83.1)	251 (88.1)	250 (97.3)	155 (52.0)	131 (42.5)	173 (58.1)	214 (72.3)	268 (90.9)	236 (82.5)	8 (4.6)	97 (97.0)	139 (55.4)	213 (91.1)	257 (62.4)	299 (96.1)	308 (98.1)	303 (99.0)
One area	754 (32.4)	354 (16.8)	32 (11.2)	7 (2.7)	143 (48.0)	177 (57.5)	119 (39.9)	82 (27.7)	27 (9.2)	49 (17.1)	167 (95.4)	3 (3.0)	107 (43.4)	22 (8.9)	152 (36.9)	12 (3.9)	6 (1.9)	3 (1.0)
Two areas	13 (0.6)	1 (0.1)	2 (0.7)	0	-	-	6 (2.0)	0	0	1 (0.4)	-	-	3 (1.2)	0	3 (0.7)	0	-	-
χ^2* (*p*)	155.97 (< .001)		16.38 (< .001)		5.46 (.02)		13.27 (< .001)		8.77 (.003)		230.32 (< .001)		77.43 (< .001)		113.73 (< .001)		0.93 (0.33)	

Note. Source: high school transcripts.

**df* = 1

Table F2

NCES Areas of Concentration (One Area) by Tech Prep Status and Consortium

	East-Central Illinois (IL)		Metro		Hillsborough (FL)		Golden Crescent (TX)		Miami Valley (OH)		Mt. Hood (OR)		Guilford County (NC)		San Mateo (CA)	
	Tech prep	Non-tech prep	Tech prep	Non-tech prep	Tech prep	Non-tech prep	Tech prep	Non-tech prep	Tech prep	Non-tech prep	Tech prep	Non-tech prep	Tech prep	Non-tech prep	Tech prep	Non-tech prep
Total	*n* = 111	*n* = 89	*n* = 184	*n* = 214	*n* = 212	*n* = 160	*n* = 128	*n* = 97	*n* = 167	*n* = 16	*n* = 174	*n* = 52	*n* = 291	*n* = 69	*n* = 42	*n* = 13
Agriculture (AG)	11 (9.9)	13 (14.6)	-	-	32 (15.1)	16 (1.0)	20 (15.6)	28 (28.9)	-	-	0	1 (1.9)	1 (0.3)	0	-	-
Business (BU)	56 (50.5)	52 (58.4)	1 (0.5)	10 (4.7)	53 (25.0)	27 (16.9)	83 (64.8)	15 (15.5)	0	11 (68.8)	29 (16.7)	15 (28.9)	123 (42.3)	24 (34.8)	21 (50.0)	8 (61.5)
Construction (CN)	2 (1.8)	1 (1.1)	13 (7.1)	25 (11.7)	1 (0.5)	0	4 (3.1)	9 (9.3)	-	-	-	-	4 (1.4)	1 (1.5)	-	-
Consumer/family studies (CFS)	20 (18.0)	14 (15.7)	-	-	35 (16.5)	18 (11.3)	2 (1.6)	10 (10.3)	-	-	40 (23.0)	12 (23.1)	11 (3.8)	18 (26.1)	3 (7.1)	2 (15.4)
Health (HL)	-	-	49 (26.6)	75 (35.1)	29 (13.7)	64 (40.0)	1 (0.8)	0	41 (24.6)	0	0	1 (1.9)	64 (22.0)	6 (8.7)	-	-
Law enforcement (LE)	-	-	-	-	4 (1.9)	5 (3.1)	12 (9.4)	0	-	-	-	-	-	-	-	-
Marketing (MK)	-	-	-	-	14 (6.6)	12 (7.5)	5 (3.9)	18 (18.6)	0	1 (6.3)	3 (1.7)	0	5 (1.7)	2 (2.9)	-	-
Mechanics/ repairer (MR)	-	-	11 (6.0)	11 (5.1)	13 (6.1)	2 (1.3)	2 (1.6)	0	3 (1.8)	0	-	-	9 (3.1)	4 (5.8)	10 (23.8)	2 (15.4)
Precision production (PP)	2 (1.8)	3 (3.4)	11 (6.0)	39 (18.2)	24 (11.3)	9 (5.6)	1 (0.8)	0	1 (0.6)	1 (6.3)	90 (51.7)	22 (42.3)	73 (25.1)	10 (14.5)	6 (14.3)	1 (7.7)
Specialized labor (SL)	20 (18.0)	6 (6.7)	-	-	23 (10.8)	5 (3.1)	3 (2.3)	17 (17.5)	0	2 (12.5)	-	-	1 (0.3)	3 (4.4)	2 (4.8)	0
Technical/com-munications (TC)	-	-	99 (53.8)	54 (25.2)	9 (4.3)	6 (3.8)	-	-	123 (73.7)	0	12 (6.9)	1 (1.9)	0	1 (1.5)	-	-

Note. Source: high school transcripts.

Table F3

NCES Areas of Specialization (One Area) by Tech Prep Status and Consortium

	East-Central Illinois (IL)		Metro		Hillsborough (FL)		Golden Crescent (TX)		Miami Valley (OH)		Mt. Hood (OR)		Guilford County (NC)		San Mateo (CA)	
	Tech prep	Non-tech prep	Tech prep	Non-tech prep	Tech prep	Non-tech prep	Tech prep	Non-tech prep	Tech prep	Non-tech prep	Tech prep	Non-tech prep	Tech prep	Non-tech prep	Tech prep	Non-tech prep
Total	*n* = 32	*n* = 7	*n* = 143	*n* = 177	*n* = 119	*n* = 82	*n* = 27	*n* = 49	*n* = 167	*n* = 3	*n* = 108	*n* = 21	*n* = 152	*n* = 12	*n* = 6	*n* = 3
Agriculture (AG)	3 (9.4)	0	-	-	27 (22.7)	15 (18.3)	5 (18.5)	13 (26.5)	-	-	-	-	1 (0.7)	0	-	-
Business (BU)	5 (15.6)	2 (28.6)	0	2 (1.1)	31 (26.1)	6 (7.3)	3 (11.1)	2 (4.1)	-	-	13 (12.0)	5 (23.8)	63 (41.5)	1 (8.3)	1 (16.7)	1 (33.3)
Construction (CN)	2 (6.3)	1 (14.3)	9 (6.3)	19 (10.7)	1 (0.8)	0	4 (14.8)	3 (6.1)	-	-	-	-	5 (3.3)	1 (8.3)	-	-
Consumer/family studies (CFS)	4 (12.5)	3 (42.9)	-	-	10 (8.4)	2 (2.4)	0	6 (12.2)	0	1 (33.3)	-	-	0	3 (25.0)	-	-
Health (HL)	-	-	19 (13.3)	67 (37.9)	9 (7.6)	38 (46.3)	-	-	40 (24.0)	0	-	-	49 (32.2)	2 (16.7)	-	-
Law enforcement (LE)	-	-	-	-	0	1 (1.2)	11 (40.7)	0	-	-	-	-	-	-	-	-
Marketing (MK)	-	-	-	-	6 (5.0)	7 (8.5)	1 (3.7)	10 (20.4)	0	1 (33.3)	-	-	-	-	-	-
Mechanics/ repairer (MR)	-	-	9 (6.3)	10 (5.7)	5 (4.2)	1 (1.2)	1 (3.7)	0	2 (1.2)	0	-	-	8 (5.3)	3 (25.0)	3 (5.0)	2 (66.7)
Precision Production (PP)	-	-	9 (6.3)	25 (14.1)	17 (14.3)	7 (8.5)	-	-	1 (0.6)	1 (0.6)	61 (56.5)	12 (57.1)	26 (17.1)	2 (16.7)	-	-
Specialized Labor (SL)	18 (56.3)	1 (14.3)	-	-	19 (16.0)	3 (3.7)	1	15 (30.6)	-	-	-	-	-	-	2 (33.3)	0
Technical/Communications (TC)	-	-	97 (67.8)	54 (30.5)	0	2 (2.4)	-	-	123 (73.7)	0	10 (9.3)	0	-	-	-	-

Note. Source: high school transcripts.

Appendix G

High School Academic Profile

Table G1

NCES Concentration, NCES Specialization, and College Prep Status by Tech Prep Status for East-Central Illinois (IL)

				Tech prep		Non-tech prep	
	Total	**Tech prep**	**Non-tech prep**	**College prep**	**Not college prep**	**College prep**	**Not college prep**
NCES concentrator	$n = 542$	$n = 285$	$n = 257$	$n = 21$	$n = 264$	$n = 55$	$n = 202$
Percentage yes	41.3	44.6	37.7	57.1	43.6	45.5	35.6
Percentage no	58.7	55.4	62.3	42.9	56.4	54.6	64.4
NCES specialist	$n = 542$	$n = 285$	$n = 257$	$n = 21$	$n = 264$	$n = 55$	$n = 202$
Percentage yes	7.6	11.9	2.7	9.5	12.1	3.6	2.5
Percentage no	92.4	88.1	97.3	90.5	87.9	96.4	97.5
		$\chi^2 = 16.38$, $df = 1$, $p < .001$					
College prep	$n = 542$	$n = 285$	$n = 257$	—	—	—	—
Percentage yes	14.0	7.4	21.4	—	—	—	—
Percentage no	86.0	92.6	78.6	—	—	—	—
		$\chi^2 = 22.07$, $df = 1$, $p < .001$					

Note. Source: high school transcripts.

Table G2

NCES Concentration, NCES Specialization, and College Prep Status by Tech Prep Status for Metro

				Tech prep		Non-tech prep	
	Total	**Tech prep**	**Non-tech prep**	**College prep**	**Not college prep**	**College prep**	**Not college prep**
NCES concentrator	$n = 606$	$n = 298$	$n = 308$	$n = 90$	$n = 208$	$n = 56$	$n = 252$
Percent yes	66.2	62.1	70.1	18.9	80.8	28.6	79.4
Percent no	33.8	37.9	29.9	81.1	19.2	71.4	20.6
		$\chi^2 = 4.38$, $df = 1$, $p = .036$		$\chi^2 = 102.18$, $df = 1$, $p < .001$		$\chi^2 = 56.43$, $df = 1$, $p < .001$	
NCES specialist	$n = 606$	$n = 298$	$n = 308$	$n = 90$	$n = 208$	$n = 56$	$n = 252$
Percentage yes	52.8	48.0	57.5	3.3	67.3	25.0	64.7
Percentage no	47.2	52.0	42.5	96.7	32.7	75.0	35.3
		$\chi^2 = 5.46$, $df = 1$, $p = .019$		$\chi^2 = 103.1$, $df = 1$, $p < .001$		$\chi^2 = 29.52$, $df = 1$, $p < .001$	
College prep	$n = 606$	$n = 298$	$n = 308$	—	—	—	—
Percentage yes	24.1	30.2	18.2	—	—	—	—
Percentage no	75.9	69.8	81.8	—	—	—	—
		$\chi^2 = 11.96$, $df = 1$, $p < .001$					

Note. Source: high school transcripts.

Table G3

NCES Concentration, NCES Specialization, and College Prep Status by Tech Prep Status for Hillsborough (FL)

				Tech prep		Non-tech prep	
	Total	**Tech prep**	**Non-tech prep**	**College prep**	**Not college prep**	**College prep**	**Not college prep**
NCES concentrator	$n = 594$	$n = 298$	$n = 296$	$n = 81$	$n = 217$	$n = 218$	$n = 78$
Percentage yes	70.7	84.2	57.1	77.8	86.6	58.3	53.9
Percentage no	29.3	15.8	42.9	22.2	13.4	41.7	46.2
		$\chi^2 = 52.79$, $df = 1$, $p < .001$					
NCES specialist	$n = 594$	$n = 298$	$n = 296$	$n = 81$	$n = 217$	$n = 218$	$n = 78$
Percentage yes	35.0	41.9	27.7	28.4	47.5	28.4	25.6
Percentage no	65.0	58.1	72.3	71.6	52.5	71.6	74.4
		$\chi^2 = 13.27$, $df = 1$, $p < .001$		$\chi^2 = 8.79$, $df = 1$, $p = .003$			
College prep	$n = 594$	$n = 298$	$n = 296$	—	—	—	—
Percentage yes	50.3	27.2	73.7	—	—	—	—
Percentage no	49.7	72.8	26.4	—	—	—	—
		$\chi^2 = 128.3$, $df = 1$, $p < .001$					

Note. Source: high school transcripts.

Table G4

NCES Concentration, NCES Specialization, and College Prep Status by Tech Prep Status for Golden Crescent (TX)

				Tech prep		Non-tech prep	
	Total	**Tech prep**	**Non-tech prep**	**College prep**	**Not college prep**	**College prep**	**Not college prep**
NCES concentrator	$n = 581$	$n = 295$	$n = 286$	$n = 154$	$n = 141$	$n = 131$	$n = 155$
Percentage yes	43.9	47.8	39.9	39.6	56.7	26.7	50.7
Percentage no	56.1	52.2	60.1	60.4	43.3	73.3	49.3
				$\chi^2 = 8.65$, $df = 1$, $p = .003$		$\chi^2 = 17.42$, $df = 1$, $p < .001$	
NCES specialist	$n = 581$	$n = 295$	$n = 286$	$n = 154$	$n = 141$	$n = 131$	$n = 155$
Percentage yes	13.3	9.2	17.5	3.3	15.6	7.6	25.6
Percentage no	86.8	90.9	82.5	96.8	84.4	92.4	74.4
		$\chi^2 = 8.77$, $df = 1$, $p = .003$		$\chi^2 = 13.52$, $df = 1$, $p < .001$		$\chi^2 = 16.25$, $df = 1$, $p < .001$	
College prep	$n = 582$	$n = 295$	$n = 287$	—	—	—	—
Percentage yes	49.0	52.2	45.6	—	—	—	—
Percentage no	51.0	47.8	54.4	—	—	—	—

Note. Source: high school transcripts.

Table G5

NCES Concentration, NCES Specialization, and College Prep Status by Tech Prep Status for Miami Valley (OH)

				Tech prep		**Non-tech prep**	
	Total	**Tech prep**	**Non-tech prep**	**College prep**	**Not college prep**	**College prep**	**Not college prep**
NCES concentrator	$n = 275$	$n = 175$	$n = 100$	$n = 35$	$n = 140$	$n = 27$	$n = 73$
Percentage yes	69.1	99.4	16.0	100.0	99.3	3.7	20.6
Percentage no	30.9	0.6	84.0	0	0.7	96.3	79.5
		$\chi^2 = 207.4$, $df = 1$, $p < .001$				$\chi^2 = 4.16$, $df = 1$, $p = .041$	
NCES specialist	$n = 275$	$n = 175$	$n = 100$	$n = 35$	$n = 140$	$n = 27$	$n = 73$
Percentage yes	61.8	95.4	3.0	97.1	95.0	3.7	2.7
Percentage no	38.2	4.6	97.0	2.9	5.0	96.3	97.3
		$\chi^2 = 230.3$, $df = 1$, $p < .001$					
College prep	$n = 275$	$n = 175$	$n = 100$	—	—	—	—
Percentage yes	22.6	20.0	27.0	—	—	—	—
Percentage no	77.5	80.0	73.0	—	—	—	—

Note. Source: high school transcripts.

Table G6

NCES Concentration, NCES Specialization, and College Prep Status by Tech Prep Status for Mt. Hood (OR)

				Tech prep		**Non-tech prep**	
	Total	**Tech prep**	**Non-tech prep**	**College prep**	**Not college prep**	**College prep**	**Not college prep**
NCES concentrator	$n = 484$	$n = 249$	$n = 235$	$n = 30$	$n = 219$	$n = 59$	$n = 177$
Percentage yes	49.0	73.9	22.6	56.7	76.3	17.0	24.4
Percentage no	51.0	26.1	77.5	43.3	23.7	83.1	75.6
		$\chi^2 = 127.5$, $df = 1$, $p < .001$		$\chi^2 = 5.25$, $df = 1$, $p = .022$			
NCES specialist	$n = 484$	$n = 249$	$n = 235$	$n = 30$	$n = 219$	$n = 59$	$n = 177$
Percentage yes	27.3	44.6	8.9	20.0	48.0	3.4	10.8
Percentage no	72.7	55.4	91.1	80.0	52.1	96.6	89.2
		$\chi^2 = 77.43$, $df = 1$, $p < .001$		$\chi^2 = 8.34$, $df = 1$, $p = .004$			
College prep	$n = 485$	$n = 249$	$n = 236$	—	—	—	—
Percentage yes	18.4	12.1	25.0	—	—	—	—
Percentage no	81.6	88.0	75.0	—	—	—	—
		$\chi^2 = 13.57$, $df = 1$, $p < .001$					

Note. Source: high school transcripts.

Table G7

NCES Concentration, NCES Specialization, and College Prep Status by Tech Prep Status for Guilford County (NC)

				Tech prep		Non-tech prep	
	Total	Tech prep	Non-tech prep	College prep	Not college prep	College prep	Not college prep
NCES concentrator	$n = 723$	$n = 412$	$n = 311$	$n = 77$	$n = 335$	$n = 79$	$n = 232$
Percentage yes	53.3	75.0	24.4	79.2	74.0	11.4	28.9
Percentage no	46.8	25.0	75.6	20.8	26.0	88.6	71.1
		$\chi^2 = 182$, $df = 1$, $p < .001$				$\chi^2 = 9.76$, $df = 1$, $p = .002$	
NCES specialist	$n = 723$	$n = 412$	$n = 311$	$n = 77$	$n = 335$	$n = 79$	$n = 232$
Percentage yes	23.1	37.6	3.9	35.1	38.2	1.3	4.7
Percentage no	76.9	62.4	96.1	64.9	61.8	98.7	95.3
		$\chi^2 = 113.7$, $df = 1$, $p < .001$					
College prep	$n = 723$	$n = 412$	$n = 311$	—	—	—	—
Percentage yes	21.6	18.7	25.4	—	—	—	—
Percentage no	78.4	81.3	74.6	—	—	—	—
		$\chi^2 = 4.719$, $df = 1$, $p = .03$					

Note. Source: high school transcripts.

Table G8

NCES Concentration, NCES Specialization, and College Prep Status by Tech Prep Status for San Mateo (CA)

				Tech prep		Non-tech prep	
	Total	Tech prep	Non-tech prep	College prep	Not college prep	College prep	Not college prep
NCES concentrator	$n = 620$	$n = 314$	$n = 306$	$n = 108$	$n = 206$	$n = 115$	$n = 191$
Percentage yes	8.9	13.4	4.3	4.6	18.0	0.9	6.3
Percentage no	91.1	86.6	95.8	95.4	82.0	99.1	93.7
		$\chi^2 = 15.97$, $df = 1$, $p < .001$		$\chi^2 = 10.87$, $df = 1$, $p = .001$		$\chi^2 = 5.171$, $df = 1$, $p = .023$	
NCES specialist	$n = 620$	$n = 314$	$n = 306$	$n = 108$	$n = 206$	$n = 115$	$n = 191$
Percentage yes	1.5	1.9	1.0	0	2.9	0	1.6
Percentage no	98.6	98.1	99.0	100.0	97.1	100.0	98.4
College prep	$n = 620$	$n = 314$	$n = 306$	—	—	—	—
Percentage yes	36.0	34.4	37.6	—	—	—	—
Percentage no	64.0	65.6	62.4	—	—	—	—

Note. Source: high school transcripts.

Appendix H

Articulated Course-Taking By Tech Prep Status

Table H1

Articulated Course-Taking by Tech Prep Status and Panel for East-Central Illinois (IL)

	Tech prep	Non-tech prep	Tech prep by panel		Non-tech prep by panel	
Variables	**Total** $n = 285$	**Total** $n = 257$	**'96** $n = 126$	**'97** $n = 159$	**'96** $n = 114$	**'97** $n = 143$
Took articulated courses						
Yes	80.0	75.9	77.8	81.8	70.2	80.4
No	20.0	24.1	22.2	18.2	29.8	19.6
Mean semester*	$n = 228$	$n = 195$	$n = 98$	$n = 130$	$n = 80$	$n = 115$
	4.165	2.867	4.17	4.16	2.81	2.9
	$t = 5.41, df = 383, p < .001$					
Articulated area*	$n = 228$	$n = 195$	$n = 98$	$n = 130$	$n = 80$	$n = 115$
Agriculture						
Yes	0.9	1.0	1.0	0.8	1.3	0.9
No	99.1	99.0	99.0	99.2	98.8	99.1
Business						
Yes	83.3	92.3	81.6	84.6	96.3	89.6
No	16.7	7.7	18.4	15.4	3.8	10.4
	$\chi^2 = 7.72, df = 1, p = .005$					
Construction						
Yes	—	—	—	—	—	—
No	—	—	—	—	—	—
Consumer/family						
Yes	—	—	—	—	—	—
No	—	—	—	—	—	—
Health						
Yes	—	—	—	—	—	—
No	—	—	—	—	—	—
Law enforcement						
Yes	—	—	—	—	—	—
No	—	—	—	—	—	—
Marketing						
Yes	—	—	—	—	—	—
No	—	—	—	—	—	—
Mechanics/repairers						
Yes	13.2	7.2	14.3	12.3	3.8	9.6
No	86.8	92.8	85.7	87.7	96.3	90.4
	$\chi^2 = 4.03, df = 1, p = .044$					

Table H1 (continued)

	Tech prep	Non-tech prep	Tech prep by panel		Non-tech prep by panel	
Variables	**Total**	**Total**	**'96**	**'97**	**'96**	**'97**
Precision production						
Yes	24.1	5.6	25.5	23.1	2.5	7.8
No	75.9	94.4	74.5	76.9	97.5	92.2
	$\chi^2 = 27.26$, $df = 1$, $p < .001$					
Science and math						
Yes	—	—	—	—	—	—
No	—	—	—	—	—	—
Technical/communications						
Yes	0.9	0.0	2.0	0.0	0.0	0.0
No	99.1	100.0	98.0	100.0	100.0	100.0

Note. Source: high school transcripts.

Table H2

Articulated Course-Taking by Tech Prep Status and Panel for Hillsborough (FL)

	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
Variables	**Total**	**Total**	**’95**	**’96**	**’97**	**’95**	**’96**	**’97**
	$n = 298$	$n = 296$	$n = 46$	$n = 103$	$n = 149$	$n = 44$	$n = 104$	$n = 148$
Took articulated courses								
Yes	85.2	63.5	71.7	85.4	89.3	40.9	63.5	70.3
No	14.8	36.5	28.3	14.6	10.7	59.1	36.5	29.7
	$\chi^2 = 36.80$, $df = 1$, $p < .001$		$\chi^2 = 8.58$, $df = 2$, $p = .014$			$\chi^2 = 12.62$, $df = 2$, $p = .002$		
Mean Semester*	$n = 254$	$n = 188$	$n = 33$	$n = 88$	$n = 133$	$n = 18$	$n = 66$	$n = 104$
	6.52	4.89	6.24	6.27	6.75	3.72	3.98	5.67
	$t = 5.32$, $df = 430$, $p < .001$					$F = 8.76$, $df = 2{,}185$, $p < .001$		
Articulated area*	$n = 254$	$n = 188$	$n = 33$	$n = 88$	$n = 133$	$n = 18$	$n = 66$	$n = 104$
Agriculture								
Yes	13.8	9.6	12.1	10.2	16.5	16.7	4.6	11.5
No	86.2	90.4	87.9	89.8	83.5	83.3	95.5	88.5
Business								
Yes	32.3	34.0	48.5	31.8	28.6	38.9	30.3	35.6
No	67.7	66.0	51.5	68.2	71.4	61.1	69.7	64.4
Construction								
Yes	0.4	0.5	0.0	0.0	0.8	0.0	0.0	1.0
No	99.6	99.5	100.0	100.0	99.3	100.0	100.0	99.0
Consumer/family								
Yes	24.8	30.3	30.3	29.6	20.3	38.9	39.4	23.1
No	75.2	69.7	69.7	70.5	79.7	61.1	60.6	76.9
Health								
Yes	9.1	19.2	0.0	10.2	10.5	5.6	24.2	18.3
No	90.9	80.9	100.0	89.8	89.5	94.4	75.8	81.7
	$\chi^2 = 9.52$, $df = 1$, $p = .002$							
Law enforcement								
Yes	3.2	4.8	9.1	3.4	1.5	5.6	4.6	4.8
No	96.9	95.2	90.9	96.6	98.5	94.4	95.5	95.2
Marketing								
Yes	11.0	12.2	0.0	11.4	13.5	5.6	9.1	15.4
No	89.0	87.8	100.0	88.6	86.5	94.4	90.9	84.6
Mechanics/repairers								
Yes	7.9	3.7	9.1	4.6	9.8	5.6	4.6	2.9
No	92.1	96.3	90.9	95.5	90.2	94.4	95.5	97.1

Table H2 (continued)

	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
Variables	**Total**	**Total**	**'95**	**'96**	**'97**	**'95**	**'96**	**'97**
Precision production								
Yes	20.9	10.6	18.2	21.6	21.1	11.1	6.1	13.5
No	79.1	89.4	81.8	78.4	79.0	88.9	93.9	86.5
	$\chi^2 = 8.20, df = 1, p = .004$							
Science and math								
Yes	—	—	—	—	—	—	—	—
No	—	—	—	—	—	—	—	—
Technical/communications								
Yes	7.5	5.9	3.0	3.4	11.3	0.0	6.1	6.7
No	92.5	94.2	97.0	96.6	88.7	100.0	93.9	93.3

Note. Source: high school transcripts.

Table H3

Articulated Course-Taking by Tech Prep Status and Panel for Golden Crescent (TX)

	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
Variables	**Total**	**Total**	**'95**	**'96**	**'97**	**'95**	**'96**	**'97**
	n =295	*n* = 288	*n* = 49	*n* = 106	*n* = 140	*n* = 47	*n* = 105	*n* = 136
Took articulated courses								
Yes	80.7	60.1	55.1	77.4	92.1	44.7	55.2	69.1
No	19.3	39.9	44.9	22.6	7.9	55.3	44.8	30.9
	$\chi^2 = 29.76$, $df = 1$, $p < .001$		$\chi^2 = 33.12$, $df = 2$, $p < .001$			$\chi^2 = 10.30$, $df = 2$, $p = .006$		
Mean Semester*	*n* = 238	*n* = 173	*n* = 27	*n* = 82	*n* = 129	*n* = 21	*n* = 58	*n* = 94
	4.81	2.67	5.3	5	4.58	2.24	2.6	2.8
	$t = 12.03$, $df = 384$, $p < .001$							
Articulated area*	*n* = 238	*n* = 173	*n* = 27	*n* = 82	*n* = 129	*n* = 21	*n* = 58	*n* = 94
Agriculture								
Yes	8.0	6.4	0.0	6.1	10.9	0.0	3.5	9.6
No	92.0	93.6	100.0	93.9	89.2	100.0	96.6	90.4
Business								
Yes	82.4	86.1	55.6	80.5	89.2	85.7	91.4	83.0
No	17.7	13.9	44.4	19.5	10.9	14.3	8.6	17.0
Construction								
Yes	12.6	3.5	7.4	13.4	13.2	0.0	3.5	4.3
No	87.4	96.5	92.6	86.6	86.8	100.0	96.6	95.7
	$\chi^2 = 10.46$, $df = 1$, $p = .001$							
Consumer/family								
Yes	12.2	13.3	3.7	19.5	9.3	9.5	19.0	10.6
No	87.8	86.7	96.3	80.5	90.7	90.5	81.0	89.4
Health								
Yes	6.7	3.5	0.0	4.9	9.3	0.0	3.5	4.3
No	93.3	96.5	100.0	95.1	90.7	100.0	96.6	95.7
Law enforcement								
Yes	10.1	2.3	33.3	13.4	3.1	0.0	0.0	4.3
No	89.9	97.7	66.7	86.6	96.9	100.0	100.0	95.7
	$\chi^2 = 9.53$, $df = 1$, $p = .002$							
Marketing								
Yes	—	—	—	—	—	—	—	—
No	—	—	—	—	—	—	—	—
Mechanics/repairers								
Yes	2.9	0.0	7.4	3.7	1.6	0.0	0.0	0.0
No	97.1	100.0	92.6	96.3	98.5	100.0	100.0	100.0

Table H3 (continued)

	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
Variables	**Total**	**Total**	**'95**	**'96**	**'97**	**'95**	**'96**	**'97**
Precision production								
Yes	14.3	4.6	7.4	9.8	18.6	0.0	1.7	7.5
No	85.7	95.4	92.6	90.2	81.4	100.0	98.3	92.6
	$\chi^2 = 10.19$, $df = 1$, $p = .001$							
Science and math								
Yes	—	—	—	—	—	—	—	—
No	—	—	—	—	—	—	—	—
Technical/communications								
Yes	14.3	4.6	18.5	12.2	14.7	19.1	1.7	3.2
No	85.7	95.4	81.5	87.8	85.3	81.0	98.3	96.8
	$\chi^2 = 10.19$, $df = 1$, $p = .001$							

Note. Source: high school transcripts.

Table H4

Articulated Course-Taking by Tech Prep Status and Panel for Mt. Hood (OR)

	Tech prep	**Non-tech prep**	**Tech prep by panel**			**Non-tech prep by panel**		
Variables	**Total**	**Total**	**'95**	**'96**	**'97**	**'95**	**'96**	**'97**
	$n = 249$	$n = 236$	$n = 57$	$n = 94$	$n = 98$	$n = 60$	$n = 83$	$n = 93$
Took articulated courses								
Yes	61.9	30.5	77.2	66.0	49.0	28.3	32.5	30.1
No	38.5	69.5	22.8	34.0	51.0	71.7	67.5	69.9
	$\chi^2 = 47.82$, $df = 1$, $p < .001$		$\chi^2 = 13.24$, $df = 2$, $p = .001$					
Mean semester*	$n = 154$	$n = 72$	$n = 44$	$n = 62$	$n = 48$	$n = 17$	$n = 27$	$n = 28$
	3.29	2.125	3.58	3.78	2.39	1.88	2.31	2.09
	$t = 5.02$, $df = 190$, $p < .001$		$F = 7.88$, $df = 2{,}151$, $p < .001$					
Articulated area*	$n = 154$	$n = 72$	$n = 44$	$n = 62$	$n = 48$	$n = 17$	$n = 27$	$n = 28$
Agriculture								
Yes	—	—	—	—	—	—	—	—
No	—	—	—	—	—	—	—	—
Business								
Yes	15.6	20.8	22.7	22.6	0.0	41.2	25.9	3.6
No	84.4	79.2	77.3	77.4	100.0	58.8	74.1	96.4
Construction								
Yes	1.3	2.8	0.0	1.6	2.1	0.0	3.7	3.6
No	98.7	97.2	100.0	98.4	97.9	100.0	96.3	96.4
Consumer/family								
Yes	27.3	36.1	9.1	14.5	60.4	29.4	33.3	42.9
No	72.7	63.9	90.9	85.5	39.6	70.6	66.7	57.1
Health								
Yes	2.6	8.3	2.3	1.6	4.2	0.0	11.1	10.7
No	97.4	91.7	97.7	98.4	95.8	100.0	88.9	89.3
Law enforcement								
Yes	—	—	—	—	—	—	—	—
No	—	—	—	—	—	—	—	—
Marketing								
Yes	0.7	0.0	2.3	0.0	0.0	0.0	0.0	0.0
No	99.4	100.0	97.7	100.0	100.0	100.0	100.0	100.0
Mechanics/repairers								
Yes	13.0	9.7	20.5	4.8	16.7	5.9	7.4	14.3
No	87.0	90.3	79.6	95.2	83.3	94.1	92.6	85.7

Table H4 (continued)

	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
Variables	**Total**	**Total**	**'95**	**'96**	**'97**	**'95**	**'96**	**'97**
Precision production								
Yes	52.0	29.2	63.6	67.7	20.8	35.3	22.2	32.1
No	48.1	70.8	36.4	32.3	79.2	64.7	77.8	67.9
	$\chi^2 = 10.30$, $df = 1$, $p = .001$							
Science and math								
Yes	2.6	1.4	0.0	6.5	0.0	0.0	3.7	0.0
No	97.4	98.6	100.0	93.6	100.0	100.0	96.3	100.0
Technical/communications								
Yes	—	—	—	—	—	—	—	—
No	—	—	—	—	—	—	—	—

Note. Source: high school transcripts.

Table H5

Articulated Course-Taking by Tech Prep Status and Panel for San Mateo (CA)

	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
Variables	**Total**	**Total**	**'95**	**'96**	**'97**	**'95**	**'96**	**'97**
	$n = 314$	$n = 306$	$n = 76$	$n = 119$	$n = 119$	$n = 74$	$n = 116$	$n = 116$
Took articulated courses								
Yes	90.8	59.2	92.1	89.1	91.1	55.4	64.7	56.0
No	9.2	40.9	7.9	10.9	8.9	44.6	35.3	44.0
	$\chi^2 = 82.97$, $df = 1$, $p <.001$							
Mean semester*	$n = 285$	$n = 181$	$n = 70$	$n = 106$	$n = 109$	$n = 41$	$n = 75$	$n = 65$
	3.35	2.63	3.59	3.37	3.19	2.37	2.85	2.54
	$t = 3.99$, $df =4\ 36$, $p < .001$							
Articulated area*	$n = 285$	$n = 181$	$n = 70$	$n = 106$	$n = 109$	$n = 41$	$n = 75$	$n = 65$
Agriculture								
Yes	—	—	—	—	—	—	—	—
No	—	—	—	—	—	—	—	—
Business								
Yes	86.3	74.0	78.6	97.2	80.7	61.0	82.7	72.3
No	13.7	26.0	21.4	2.8	19.3	39.0	17.3	27.7
	$\chi^2 = 11.10$, $df = 1$, $p < .001$							
Construction								
Yes	—	—	—	—	—	—	—	—
No	—	—	—	—	—	—	—	—
Consumer/family								
Yes	11.6	12.7	17.1	7.6	11.9	14.6	10.7	13.9
No	88.4	87.3	82.9	92.5	88.1	85.4	89.3	86.2
Health								
Yes	—	—	—	—	—	—	—	—
No	—	—	—	—	—	—	—	—
Law enforcement								
Yes	—	—	—	—	—	—	—	—
No	—	—	—	—	—	—	—	—
Marketing								
Yes	2.1	2.8	5.7	0.0	1.8	4.9	2.7	1.5
No	97.9	97.2	94.3	100.0	98.2	95.1	97.3	98.5
Mechanics/repairers								
Yes	13.0	10.5	10.0	8.5	19.3	14.6	8.0	10.8
No	87.0	89.5	90.0	91.5	80.7	85.4	92.0	89.2

Table H5 (continued)

	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
Variables	**Total**	**Total**	**'95**	**'96**	**'97**	**'95**	**'96**	**'97**
Precision production								
Yes	12.3	11.1	20.0	6.6	12.8	17.1	9.3	9.2
No	87.7	89.0	80.0	93.4	87.2	82.9	90.7	90.8
Science and math								
Yes	12.6	19.9	15.7	9.4	13.8	26.8	13.3	23.1
No	87.4	80.1	84.3	90.6	86.2	73.2	86.7	76.9
	$\chi^2 = 4.46$, $df = 1$, $p = .034$							
Technical/communications								
Yes	—	—	—	—	—	—	—	—
No	—	—	—	—	—	—	—	—

Note. Source: high school transcripts.

Appendix I

High School Work-Based Learning

Table 11

High School Work-Based Learning by Tech Prep Status and Panel for East-Central Illinois (IL)

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel		Non-tech prep by panel	
				'96	'97	'96	'97
Participation	$n = 342$	$n = 184$	$n = 158$	$n = 85$	$n = 99$	$n = 65$	$n = 93$
Yes	64.3	71.2	56.3	58.8	81.8	44.6	64.5
No	35.7	28.8	43.7	41.2	18.2	55.4	35.5
		$\chi^2 = 8.19$, $df = 1$, $p = .004$		$\chi^2 = 11.79$, $df = 1$, $p < .001$		$\chi^2 = 6.16$, $df = 1$, $p = .013$	
Work-based learning categories	$n = 220$	$n = 131$	$n = 89$	$n = 50$	$n = 81$	$n = 29$	$n = 60$
Job shadowing							
Yes	34.1	32.1	37.1	28.0	34.6	37.9	36.7
No	65.9	67.9	62.9	72.0	65.4	62.1	63.3
Internship							
Yes	9.6	10.7	7.9	12.0	9.9	13.8	5.0
No	90.4	89.3	92.1	88.0	90.1	86.2	95.0
Co-op							
Yes	23.6	26.7	19.1	18.0	32.1	17.2	20.0
No	76.4	73.3	80.9	82.0	67.9	82.8	80.0
Tech prep							
Yes	45.5	55.7	30.3	60.0	53.1	34.5	28.3
No	54.5	44.3	69.7	40.0	46.9	65.5	71.7
		$\chi^2 = 13.78$, $df = 1$, $p < .001$					
Youth apprenticeship							
Yes	13.6	20.6	3.4	24.0	18.5	6.9	1.7
No	86.4	79.4	96.6	76.0	81.5	93.1	98.3
		$\chi^2 = 13.38$, $df = 1$, $p < .001$					
School-sponsored enterprise/business							
Yes	0.9	1.5	0.0	4.0	0.0	0.0	0.0
No	99.1	98.5	100.0	96.0	100.0	100.0	100.0
Career academy							
Yes	1.8	1.5	2.3	2.0	1.2	0.0	3.3
No	98.2	98.5	97.8	98.0	98.8	100.0	96.7
Community service and service learning							
Yes	22.3	15.3	32.6	8.0	19.8	24.1	36.7
No	77.7	84.7	67.4	92.0	80.3	75.9	63.3
		$\chi^2 = 9.18$, $df = 1$, $p = .002$					

Note. Source: 1998 Education-To-Careers Follow-Up Survey.

Table I2

High School Work-Based Learning by Tech Prep Status and Panel for Metro

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
				'95	'96	'97	'95	'96	'97
Participation	$n = 276$	$n = 135$	$n = 141$	$n = 28$	$n = 36$	$n = 71$	$n = 40$	$n = 42$	$n = 59$
Yes	72.1	71.9	72.3	75.0	80.6	66.2	75.0	71.4	71.2
No	27.9	28.2	27.7	25.0	19.4	33.8	25.0	28.6	28.8
Work-based learning categories	$n = 199$	$n = 97$	$n = 102$	$n = 21$	$n = 29$	$n = 47$	$n = 30$	$n = 30$	$n = 42$
Job shadowing									
Yes	14.6	13.4	15.7	9.5	13.8	14.9	10.0	16.7	19.1
No	85.4	86.6	84.3	90.5	86.2	85.1	90.0	83.3	81.0
Internship									
Yes	33.7	30.9	36.3	28.6	27.6	34.0	40.0	30.0	38.1
No	66.3	69.1	63.7	71.4	72.4	66.0	60.0	70.0	61.9
Co-op									
Yes	24.6	18.6	30.4	19.1	13.8	21.3	30.0	30.0	31.0
No	75.4	81.4	69.6	81.0	86.2	78.7	70.0	70.0	69.1
Tech prep									
Yes	38.2	51.6	25.5	38.1	62.1	51.1	20.0	30.0	26.2
No	61.8	48.5	74.5	61.9	37.9	48.9	80.0	70.0	73.8
		$\chi^2 = 14.30$, $df = 1$, $p < .001$							
Youth apprenticeship									
Yes	13.6	15.5	11.8	19.1	13.8	14.9	10.0	20.0	7.1
No	86.4	84.5	88.2	81.0	86.2	85.1	90.0	80.0	92.9
School-sponsored enterprise/business									
Yes	2.5	3.1	2.0	0.0	6.9	2.1	0.0	6.7	0.0
No	97.5	96.9	98.0	100.0	93.1	97.9	100.0	93.3	100.0
Career academy									
Yes	9.0	6.2	11.8	9.5	10.3	2.1	16.7	6.7	11.9
No	91.0	93.8	88.2	90.5	89.7	97.9	83.3	93.3	88.1
Community service and service learning									
Yes	25.1	22.7	27.5	23.8	10.3	29.8	16.7	26.7	35.7
No	74.9	77.3	72.6	76.2	89.7	70.2	83.3	73.3	64.3

Note. Source: 1998 Education-To-Careers Follow-Up Survey.

Table 13

High School Work-Based Learning by Tech Prep Status and Panel for Hillsborough (FL)

				Tech prep by panel			Non-tech prep by panel		
Variables	**Total**	**Tech prep**	**Non-tech prep**	**'95**	**'96**	**'97**	**'95**	**'96**	**'97**
Participation	$n = 270$	$n = 129$	$n = 141$	$n = 16$	$n = 38$	$n = 75$	$n = 16$	$n = 50$	$n = 75$
Yes	74.8	80.6	69.5	81.3	79.0	81.3	62.5	72.0	69.3
No	25.2	19.4	30.5	18.8	21.1	18.7	37.5	28.0	30.7
		$\chi^2 = 4.42$, $df = 1$, $p = .036$							
Work-based learning categories	$n = 202$	$n = 104$	$n = 98$	$n = 13$	$n = 30$	$n = 61$	$n = 8$	$n = 19$	$n = 30$
Job shadowing									
Yes	26.2	11.5	41.8	7.7	16.7	9.8	50.0	44.4	38.5
No	73.8	88.5	58.2	92.3	83.3	90.2	50.0	55.6	61.5
		$\chi^2 = 23.93$, $df = 1$, $p < .001$							
Internship									
Yes	11.4	6.7	16.3	0.0	10.0	6.6	60.0	11.1	11.5
No	88.6	93.3	83.7	100.0	90.0	93.4	40.0	88.9	88.5
		$\chi^2 = 4.60$, $df = 1$, $p = .032$					$\chi^2 = 15.55$, $df = 2$, $p < .001$		
Co-op									
Yes	37.1	41.4	32.7	38.5	40.0	42.6	50.0	25.0	34.6
No	62.9	58.7	67.4	61.5	60.0	57.4	50.0	75.0	65.4
Tech prep									
Yes	48.0	57.7	37.8	38.5	53.3	63.9	40.0	27.8	44.2
No	52.0	42.3	62.2	61.5	46.7	36.1	60.0	72.2	55.8
		$\chi^2 = 8.04$, $df = 1$, $p = .005$							
Youth apprenticeship									
Yes	8.4	7.7	9.2	15.4	10.0	4.9	0.0	8.3	11.5
No	91.6	92.3	90.8	84.6	90.0	95.1	100.0	91.7	88.5
School-sponsored enterprise/business									
Yes	5.0	3.9	6.1	0.0	3.3	4.9	0.0	2.8	9.6
No	95.0	96.2	93.9	100.0	96.7	95.1	100.0	97.2	90.4
Career academy									
Yes	19.8	15.4	24.5	7.7	20.0	14.8	40.0	19.4	25.0
No	80.2	84.6	75.5	92.3	80.0	85.3	60.0	80.6	75.0
Community service and service learning									
Yes	33.2	21.2	45.9	15.4	30.0	18.0	50.0	50.0	42.3
No	66.8	78.9	54.1	84.6	70.0	82.0	50.0	50.0	57.7
		$\chi^2 = 13.96$, $df = 1$, $p < .001$							

Note. Source: 1998 Education-To-Careers Follow-Up Survey.

Table I4

High School Work-Based Learning by Tech Prep Status and Panel for Golden Crescent (TX)

				Tech prep by panel			Non-tech prep by panel		
Variables	**Total**	**Tech prep**	**Non-tech prep**	**'95**	**'96**	**'97**	**'95**	**'96**	**'97**
Participation	*n* = 224	*n* = 130	*n* = 94	*n* = 18	*n* = 42	*n* = 70	*n* = 12	*n* = 30	*n* = 52
Yes	64.7	67.7	60.6	55.6	69.1	70.0	66.7	63.3	57.7
No	35.3	32.3	39.4	44.4	30.9	30.0	33.3	36.7	42.3
Work-based learning categories	*n* = 145	*n* = 88	*n* = 57	*n* = 10	*n* = 29	*n* = 49	*n* = 8	*n* = 19	*n* = 30
Job shadowing									
Yes	5.5	8.0	1.8	10.0	10.3	6.1	12.5	0.0	0.0
No	94.5	92.1	98.3	90.0	89.7	93.9	87.5	100.0	100.0
Internship									
Yes	3.4	3.4	3.5	10.0	6.9	0.0	0.0	0.0	6.7
No	96.6	96.6	96.5	90.0	93.1	100.0	100.0	100.0	93.3
Co-op									
Yes	33.8	30.7	38.6	20.0	37.9	28.6	25.0	31.6	46.7
No	66.2	69.3	61.4	80.0	62.1	71.4	75.0	68.4	53.3
Tech prep									
Yes	53.1	64.8	35.1	60.0	55.2	71.4	37.5	21.1	43.3
No	46.9	35.2	64.9	40.0	44.8	28.6	62.5	79.0	56.7
		$\chi^2 = 12.24$, $df = 1$, $p < .001$							
Youth apprenticeship									
Yes	2.1	2.3	1.8	0.0	3.5	2.0	0.0	0.0	3.3
No	97.9	97.7	98.3	100.0	96.6	98.0	100.0	100.0	96.7
School-sponsored enterprise/business									
Yes	6.2	5.7	7.0	10.0	3.5	6.1	0.0	10.5	6.7
No	93.8	94.3	93.0	90.0	96.6	93.9	100.0	89.5	93.3
Career academy									
Yes	2.8	2.3	3.5	0.0	0.0	4.1	0.0	10.5	0.0
No	97.2	97.7	96.5	100.0	100.0	95.9	100.0	89.5	100.0
Community service and service learning									
Yes	25.5	19[illegible]	35.1	10.0	6.9	28.6	37.5	57.9	20.0
No	74.5	80.7	64.9	90.0	93.1	71.4	62.5	42.1	80.0
		$\chi^2 = 4.53$, $df = 1$, $p = .033$							

Note. Source: 1998 Education-To-Careers Follow-Up Survey.

Table 15

High School Work-Based Learning by Tech Prep Status and Panel for Miami Valley (OH)

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel		Non-tech prep by panel	
				'96	'97	'96	'97
Participation	$n = 197$	$n = 99$	$n = 98$	$n = 34$	$n = 65$	$n = 34$	$n = 64$
Yes	80.2	95.0	65.3	97.1	93.9	52.9	71.9
No	19.8	5.1	34.7	2.9	6.2	47.1	28.1
		$\chi^2 = 27.26, df = 1, p < .001$					
Work-based learning categories	$n = 158$	$n = 94$	$n = 64$	$n = 33$	$n = 61$	$n = 18$	$n = 46$
Job shadowing							
Yes	47.5	53.2	39.1	45.5	57.4	33.3	41.3
No	52.5	46.8	60.9	54.6	42.6	66.7	58.7
Internship							
Yes	12.7	14.9	9.4	12.1	16.4	11.1	8.7
No	87.3	85.1	90.6	87.9	83.6	88.9	91.3
Co-op							
Yes	13.9	11.7	17.2	12.1	11.5	0.0	23.9
No	86.1	88.3	82.8	87.9	88.5	100.0	76.1
Tech prep							
Yes	65.2	91.5	26.6	87.9	93.4	22.2	28.3
No	34.8	8.5	73.4	12.1	6.6	77.8	71.7
		$\chi^2 = 70.73, df = 1, p < .001$					
Youth apprenticeship							
Yes	3.2	2.1	4.7	0.0	3.3	5.6	4.4
No	96.8	97.9	95.3	100.0	96.7	94.4	95.7
School-sponsored enterprise/business							
Yes	5.1	2.1	9.4	0.0	3.3	11.1	8.7
No	94.9	97.9	90.6	100.0	96.7	88.9	91.3
		$\chi^2 = 4.16, df = 1, p = .04$					
Career academy							
Yes	6.3	6.4	6.3	9.1	4.9	0.0	8.7
No	93.7	93.6	93.8	90.9	95.1	100.0	91.3
Community service and service learning							
Yes	22.8	13.8	35.9	6.1	18.0	50.0	30.4
No	77.2	86.2	64.1	93.9	82.0	50.0	69.6
		$\chi^2 = 10.58, df = 1, p = .001$					

Note. Source: 1998 Education-To-Careers Follow-Up Survey.

Table 16

High School Work-Based Learning by Tech Prep Status and Panel for Mt. Hood (OR)

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
				'95	'96	'97	'95	'96	'97
Participation	$n = 225$	$n = 115$	$n = 110$	$n = 21$	$n = 40$	$n = 54$	$n = 30$	$n = 43$	$n = 37$
Yes	67.6	69.6	65.5	81.0	55.0	75.9	70.0	60.5	67.6
No	32.4	30.4	34.6	19.1	45.0	24.1	30.0	39.5	32.4
				$\chi^2 = 6.33, df = 2, p = .042$					
Work-based learning categories	$n = 152$	$n = 80$	$n = 72$	$n = 17$	$n = 22$	$n = 41$	$n = 21$	$n = 26$	$n = 25$
Job shadowing									
Yes	51.3	56.3	45.9	64.7	40.9	61.0	52.4	34.6	52.0
No	48.7	43.8	54.1	35.3	59.1	39.0	47.6	65.4	48.0
Internship									
Yes	18.4	23.8	12.5	17.7	22.7	26.8	14.3	7.7	16.0
No	81.6	76.3	87.5	82.4	77.3	73.2	85.7	92.3	84.0
Co-op									
Yes	16.4	16.3	16.7	11.8	27.3	12.2	19.1	11.5	20.0
No	83.6	83.8	83.3	88.2	72.7	87.8	81.0	88.5	80.0
Tech prep									
Yes	26.3	31.3	20.8	47.1	27.3	26.8	14.3	23.1	24.0
No	73.7	68.8	79.2	52.9	72.7	73.2	85.7	76.9	76.0
Youth apprenticeship									
Yes	9.9	8.8	11.1	0.0	4.6	14.6	9.5	7.7	16.0
No	90.1	91.3	88.9	100.0	95.5	85.4	90.5	92.3	84.0
School-sponsored enterprise/business									
Yes	13.2	12.5	13.9	5.9	4.6	19.5	4.8	11.5	24.0
No	86.8	87.5	86.1	94.1	95.5	80.5	95.2	88.5	76.0
Career academy									
Yes	8.6	6.3	11.1	0.0	4.6	9.8	9.5	15.4	8.0
No	91.4	93.8	88.9	100.0	95.5	90.2	90.5	84.6	92.0
Community service and service learning									
Yes	34.9	26.3	44.4	35.3	27.3	22.0	47.6	46.2	40.0
No	65.1	73.8	55.6	64.7	72.7	78.1	52.4	53.9	60.0
		$\chi^2 = 5.52, df = 1, p = .019$							

Note. Source: 1998 Education-To-Careers Follow-Up Survey.

Table I7

High School Work-Based Learning by Tech Prep Status and Panel for Guilford County (NC)

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
				'95	'96	'97	'95	'96	'97
Participation	$n = 356$	$n = 208$	$n = 148$	$n = 38$	$n = 71$	$n = 99$	$n = 39$	$n = 60$	$n = 49$
Yes	70.8	82.2	54.7	76.3	74.7	89.9	46.2	51.7	65.3
No	29.2	17.8	45.3	23.7	25.4	10.1	53.9	48.3	34.7
		$\chi^2 = 31.58$, $df = 1$, $p < .001$		$\chi^2 = 7.68$, $df = 2$, $p = .022$					
Work-based learning categories	$n = 252$	$n = 171$	$n = 81$	$n = 29$	$n = 53$	$n = 89$	$n = 18$	$n = 31$	$n = 32$
Job shadowing									
Yes	32.5	32.8	32.1	31.0	30.2	34.8	5.6	32.3	46.9
No	67.5	67.3	67.9	69.0	69.8	65.2	94.4	67.7	53.1
							$\chi^2 = 9.03$, $df = 2$, $p = .011$		
Internship									
Yes	16.7	21.1	7.4	20.7	17.0	23.6	0.0	9.7	9.4
No	83.3	79.0	92.6	79.3	83.0	76.4	100.0	90.3	90.6
		$\chi^2 = 7.37$, $df = 1$, $p = .007$							
Co-op									
Yes	24.2	29.8	12.4	13.8	37.7	30.3	27.8	6.5	9.4
No	75.8	70.2	87.7	86.2	62.3	69.7	72.2	93.6	90.6
		$\chi^2 = 9.15$, $df = 1$, $p = .003$							
Tech prep									
Yes	44.4	52.6	27.2	41.4	49.1	58.4	27.8	32.3	21.9
No	55.6	47.4	72.8	58.6	50.9	41.6	72.2	67.7	78.1
		$\chi^2 = 14.44$, $df = 1$, $p < .001$							
Youth apprenticeship									
Yes	13.5	18.1	3.7	13.8	22.6	16.9	11.1	0.0	3.1
No	86.5	81.9	96.3	86.2	77.4	83.2	88.9	100.0	96.9
		$\chi^2 = 9.80$, $df = 1$, $p = .002$							
School-sponsored enterprise/business									
Yes	2.8	2.3	3.7	3.5	1.9	2.3	5.6	3.2	3.1
No	97.2	97.7	96.3	96.6	98.1	97.8	94.4	96.8	96.9
Career academy									
Yes	6.7	7.6	4.9	3.5	7.6	9.0	11.1	3.2	3.1
No	93.3	92.4	95.1	96.6	92.5	91.0	88.9	96.8	96.9

Table I7 (continued)

				Tech prep by panel			**Non-tech prep by panel**		
Variables	**Total**	**Tech prep**	**Non-tech prep**	**'95**	**'96**	**'97**	**'95**	**'96**	**'97**
Community service and service learning									
Yes	37.3	28.1	56.8	27.6	37.7	22.5	55.6	64.5	50.0
No	62.7	71.9	43.2	72.4	62.3	77.5	44.4	35.5	50.0
		$\chi^2 = 19.39$, $df = 1$, $p < .001$							

Note. Source: 1998 Education-To-Careers Follow-Up Survey.

Table 18

High School Work-Based Learning by Tech Prep Status and Panel for San Mateo (CA)

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
				'95	'96	'97	'95	'96	'97
Participation	n =237	n = 123	n = 114	n = 27	n = 41	n = 55	n = 31	n = 40	n = 43
Yes	48.5	53.7	43.0	48.2	51.2	58.2	32.3	47.5	46.5
No	51.5	46.3	57.0	51.9	48.8	41.8	67.7	52.5	53.5
Work-based learning categories	n = 115	n = 66	n = 49	n = 13	n = 21	n = 32	n = 10	n = 19	n = 20
Job shadowing									
Yes	6.1	6.1	6.1	7.7	0.0	9.4	20.0	0.0	5.0
No	93.9	93.9	93.9	92.3	100.0	90.6	80.0	100.0	95.0
Internship									
Yes	9.6	7.6	12.2	0.0	0.0	15.6	0.0	21.1	10.0
No	90.4	92.4	87.8	100.0	100.0	84.4	100.0	79.0	90.0
Co-op									
Yes	29.6	27.3	32.7	30.8	23.8	28.1	20.0	31.6	40.0
No	70.4	72.7	67.4	69.2	76.2	71.9	80.0	68.4	60.0
Tech prep									
Yes	27.0	37.9	12.2	30.8	42.9	37.5	10.0	15.8	10.0
No	73.0	62.1	87.8	69.2	57.1	62.5	90.0	84.2	90.0
		$\chi^2 = 9.38$, $df = 1$, $p = .002$							
Youth apprenticeship									
Yes	4.3	4.6	4.1	7.7	0.0	6.3	0.0	5.3	5.0
No	95.7	95.5	95.9	92.3	100.0	93.8	100.0	94.7	95.0
School-sponsored enterprise/business									
Yes	5.2	6.1	4.1	0.0	4.8	9.4	0.0	5.3	5.0
No	94.8	93.9	95.9	100.0	95.2	90.6	100.0	94.7	95.0
Career academy									
Yes	2.6	3.0	2.0	0.0	4.8	3.1	0.0	0.0	5.0
No	97.4	97.0	98.0	100.0	95.2	96.9	100.0	100.0	95.0
Community service and service learning									
Yes	43.5	40.9	46.9	38.5	33.3	46.9	50.0	47.4	45.0
No	56.5	59.1	53.1	61.5	66.7	53.1	50.0	52.6	55.0

Note. Source: 1998 Education-To-Careers Follow-Up Survey.

Appendix J

High School Work Experience

Table J1
High School Work Experience by Tech Prep Status and Panel for East-Central Illinois (IL)

	Tech prep	Non-tech prep	Tech prep by panel		Non-tech prep by panel	
			'96	'97	'96	'97
Job status	$n = 181$	$n = 156$	$n = 85$	$n = 96$	$n = 65$	$n = 91$
Yes	85.1	83.3	87.1	83.3	83.1	83.5
No	14.9	16.7	12.9	16.7	16.9	16.5
Wages per hour	$n = 153$	$n = 129$	$n = 74$	$n = 79$	$n = 54$	$n = 75$
I don't know	0.0	0.8	0.0	0.0	0.0	1.3
0	0.7	1.6	0.0	1.3	1.9	1.3
$5.25 or less	36.6	44.2	36.5	36.7	48.2	41.3
$5.26–$6.00	36.0	38.8	31.1	40.5	33.3	42.7
$6.01–$7.00	16.3	8.5	25.7	7.6	7.4	9.3
$7.01–$8.00	6.5	4.7	2.7	10.1	9.3	1.3
More than $8.00	3.9	1.6	4.1	3.8	0.0	2.7
Work hours per week	$n = 152$	$n = 130$	$n = 73$	$n = 79$	$n = 54$	$n = 76$
Less than 5 hours	0.0	3.9	0.0	0.0	3.7	4.0
6–10 hours	7.2	11.5	8.2	6.3	14.8	9.2
11–20 hours	36.8	32.3	41.1	32.9	35.2	30.3
21–30 hours	27.0	34.6	23.3	30.4	29.6	38.2
31–40 hours	24.3	14.6	23.3	25.3	13.0	15.8
More than 40 hours	4.6	3.1	4.1	5.1	3.7	2.6
	$\chi^2 = 12.77$, $df = 5$, $p = .026$					

Note. Source: 1998 Education-To-Careers Follow-Up Survey.

Table J2

High School Work Experience by Tech Prep Status and Panel for Metro

	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
			'95	'96	'97	'95	'96	'97
Job status	*n* = 134	*n* = 140	*n* = 28	*n* = 35	*n* = 71	*n* = 40	*n* = 40	*n* = 60
Yes	71.6	65.0	60.7	82.9	70.4	62.5	67.5	65.0
No	28.4	35.0	39.3	17.1	29.6	37.5	32.5	35.0
Wages per hour	*n* = 96	*n* = 90	*n* = 17	*n* = 29	*n* = 50	*n* = 25	*n* = 27	*n* = 38
I don't know	1.0	2.2	0.0	0.0	2.0	8.0	0.0	0.0
0	3.1	3.3	0.0	0.0	6.0	0.0	3.7	5.3
$5.25 or less	50.0	51.1	41.2	51.7	52.0	52.0	55.6	47.4
$5.26–$6.00	35.4	23.3	41.2	31.0	36.0	16.0	22.2	29.0
$6.01–$7.00	4.2	8.9	11.8	6.9	0.0	16.0	7.4	5.3
$7.01–$8.00	4.2	5.6	0.0	6.9	4.0	4.0	7.4	5.3
More than $8.00	2.1	5.6	5.9	3.5	0.0	4.0	3.7	7.9
Work hours per week	*n* = 96	*n* = 90	*n* = 17	*n* = 29	*n* = 50	*n* = 25	*n* = 27	*n* = 38
Less than 5 hours	2.1	2.2	0.0	0.0	4.0	0.0	3.7	2.6
6–10 hours	14.6	7.8	23.5	6.9	16.0	16.0	7.4	2.6
11–20 hours	40.6	42.2	29.4	51.7	38.0	40.0	48.2	39.5
21–30 hours	26.0	30.0	29.4	27.6	24.0	24.0	25.9	36.8
31–40 hours	16.7	17.8	17.7	13.8	18.0	20.0	14.8	18.4
More than 40 hours	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Note. Source: 1998 Education-To-Careers Follow-Up Survey.

Table J3

High School Work Experience by Tech Prep Status and Panel for Hillsborough (FL)

	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
			’95	’96	’97	’95	’96	’97
Job status	*n* = 128	*n* = 140	*n* = 16	*n* = 38	*n* = 74	*n* = 16	*n* = 50	*n* = 74
Yes	86.7	82.9	81.3	89.5	86.5	75.0	82.0	85.1
No	13.3	17.1	18.8	10.5	13.5	25.0	18.0	14.9
Wages per hour	*n* = 111	*n* = 116	*n* = 13	*n* = 34	*n* = 64	*n* = 12	*n* = 41	*n* = 63
I don’t know	0.0	1.7	0.0	0.0	0.0	0.0	2.4	1.6
0	0.9	0.0	0.0	2.9	0.0	0.0	0.0	0.0
$5.25 or less	27.9	30.2	30.8	29.4	26.6	16.7	39.0	27.0
$5.26–$6.00	38.7	46.6	61.5	35.3	35.9	50.0	41.5	49.2
$6.01–$7.00	22.5	10.3	0.0	26.5	25.0	16.7	7.3	11.1
$7.01–$8.00	8.1	6.0	7.7	2.9	10.9	16.7	2.4	6.4
More than $8.00	1.8	5.2	0.0	2.9	1.6	0.0	7.3	4.8
Work hours per week	*n* = 111	*n* = 116	*n* = 13	*n* = 34	*n* = 64	*n* = 12	*n* = 41	*n* = 63
Less than 5 hours	0.0	2.6	0.0	0.0	0.0	8.3	2.4	1.6
6–10 hours	4.5	6.9	15.4	0.0	4.7	8.3	2.4	9.5
11–20 hours	43.2	37.9	15.4	52.9	43.8	33.3	43.9	34.9
21–30 hours	31.5	39.7	38.5	26.5	32.8	50.0	39.0	38.1
31–40 hours	19.8	9.5	30.8	20.6	17.2	0.0	7.3	12.7
More than 40 hours	0.9	3.5	0.0	0.0	1.6	0.0	4.9	3.2

Note. Source: 1998 Education-To-Careers Follow-Up Survey.

Table J4
High School Work Experience by Tech Prep Status and Panel for Golden Crescent (TX)

	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
			'95	'96	'97	'95	'96	'97
Job status	*n* = 129	*n* = 94	*n* = 17	*n* = 42	*n* = 70	*n* = 12	*n* = 30	*n* = 52
Yes	65.9	76.6	70.6	52.4	72.9	66.7	76.7	78.9
No	34.1	23.4	29.4	47.6	27.1	33.3	23.3	21.2
Wages per hour	*n* = 85	*n* = 72	*n* = 12	*n* = 22	*n* = 51	*n* = 8	*n* = 23	*n* = 41
I don't know	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0	1.2	1.4	0.0	0.0	2.0	0.0	4.4	0.0
$5.25 or less	56.5	55.6	58.3	50.0	58.8	75.0	52.2	53.7
$5.26–$6.00	29.4	30.6	33.3	31.8	27.5	25.0	30.4	31.7
$6.01–$7.00	8.2	9.7	0.0	13.6	7.8	0.0	13.0	9.8
$7.01–$8.00	2.4	2.8	0.0	4.6	2.0	0.0	0.0	4.9
More than $8.00	2.4	0.0	8.3	0.0	2.0	0.0	0.0	0.0
Work hours per week	*n* = 85	*n* = 72	*n* = 12	*n* = 22	*n* = 51	*n* = 8	*n* = 23	*n* = 41
Less than 5 hours	1.2	1.4	0.0	0.0	2.0	0.0	4.4	0.0
6–10 hours	14.1	9.7	25.0	4.6	15.7	0.0	4.4	14.6
11–20 hours	44.7	36.1	25.0	68.2	39.2	50.0	26.1	39.0
21–30 hours	24.7	37.5	25.0	13.6	29.4	50.0	34.8	36.6
31–40 hours	12.9	8.3	16.7	13.6	11.8	0.0	17.4	4.9
More than 40 hours	2.4	6.9	8.3	0.0	2.0	0.0	13.0	4.9

Note. Source: 1998 Education-To-Careers Follow-Up Survey.

Table J5

High School Work Experience by Tech Prep Status and Panel for Miami Valley (OH)

	Tech prep	**Non-tech prep**	**Tech prep by panel**		**Non-tech prep by panel**	
			'96	**'97**	**'96**	**'97**
Job status	$n = 99$	$n = 97$	$n = 34$	$n = 65$	$n = 33$	$n = 64$
Yes	88.9	89.7	85.3	90.8	75.8	96.9
No	11.1	10.3	14.7	9.2	24.2	3.1
					$\chi^2 = 10.50$, $df = 1$, $p = .001$	
Wages per hour	$n = 88$	$n = 87$	$n = 29$	$n = 59$	$n = 25$	$n = 62$
I don't know	0.0	1.2	0.0	0.0	0.0	1.6
0	2.3	0.0	0.0	3.4	0.0	0.0
$5.25 or less	20.5	28.7	31.0	15.3	28.0	29.0
$5.26–$6.00	37.5	37.9	34.5	39.0	40.0	37.1
$6.01–$7.00	28.4	13.8	20.7	32.2	16.0	12.9
$7.01–$8.00	6.8	11.5	3.5	8.5	8.0	12.9
More than $8.00	4.6	6.9	10.3	1.7	8.0	6.5
Work hours per week	$n = 88$	$n = 87$	$n = 29$	$n = 59$	$n = 25$	$n = 62$
Less than 5 hours	—	—	—	—	—	—
6–10 hours	3.4	11.5	3.5	3.4	8.0	12.9
11–20 hours	30.7	54.0	27.6	32.2	52.0	54.8
21–30 hours	46.6	25.6	44.8	47.5	40.0	19.4
31–40 hours	18.2	9.2	20.7	17.0	0.0	12.9
More than 40 hours	1.1	0.0	3.5	0.0	0.0	0.0
	$\chi^2 = 18.5664$, $df = 4$, $p = 0.001$					

Note. Source: 1998 Education-To-Careers Follow-Up Survey.

Table J6

High School Work Experience by Tech Prep Status and Panel for Mt. Hood (OR)

	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
			'95	'96	'97	'95	'96	'97
Job status	*n* = 114	*n* = 110	*n* = 21	*n* = 40	*n* = 53	*n* = 30	*n* = 43	*n* = 37
Yes	79.8	80.0	90.5	67.5	84.9	76.7	86.1	75.7
No	20.2	20.0	9.5	32.5	15.1	23.3	14.0	24.3
			$\chi^2 = 6.10$, $df = 2$, $p = .047$					
Wages per hour	*n* = 91	*n* = 88	*n* = 19	*n* = 27	*n* = 45	*n* = 23	*n* = 37	*n* = 28
I don't know	1.1	0.0	0.0	0.0	2.2	0.0	0.0	0.0
0	1.1	1.1	5.3	0.0	0.0	0.0	0.0	3.6
$5.25 or less	24.2	35.2	42.1	25.9	15.6	52.2	21.6	39.3
$5.26–$6.00	34.1	31.8	31.6	37.0	33.3	26.1	35.1	32.1
$6.01–$7.00	17.6	19.3	5.3	11.0	26.7	17.4	18.9	21.4
$7.01–$8.00	9.9	10.2	10.5	7.4	11.1	4.4	18.9	3.6
More than $8.00	12.1	2.3	5.3	18.5	11.1	0.0	5.4	0.0
			$M^2 = 5.87$, $df = 1$, $p = .015$*					
Work hours per week	*n* = 91	*n* = 88	*n* = 19	*n* = 27	*n* = 45	*n* = 23	*n* = 37	*n* = 28
Less than 5 hours	1.1	4.6	5.3	0.0	0.0	4.4	8.1	0.0
6–10 hours	7.7	12.5	0.0	3.7	13.3	8.7	16.2	10.7
11–20 hours	28.6	37.5	42.0	22.2	26.7	30.4	40.5	39.3
21–30 hours	44.0	28.4	26.3	44.4	51.1	43.5	21.6	25.0
31–40 hours	15.4	17.1	21.1	25.9	6.7	13.0	13.5	25.0
More than 40 hours	3.3	0.0	5.3	3.7	2.2	0.0	0.0	0.0

Note. Source: 1998 Education-To-Careers Follow-Up Survey.

*The category "I don't know" was deleted from the test.

Table J7

High School Work Experience by Tech Prep Status and Panel for Guilford County (NC)

	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
			'95	'96	'97	'95	'96	'97
Job status	$n = 206$	$n = 148$	$n = 37$	$n = 71$	$n = 98$	$n = 39$	$n = 60$	$n = 49$
Yes	89.8	81.8	86.5	88.7	91.8	76.9	83.3	83.7
No	10.2	18.2	13.5	11.3	8.2	23.1	16.7	16.3
	$\chi^2 = 4.76$, $df = 1$, $p = .029$							
Wages per hour	$n = 185$	$n = 121$	$n = 32$	$n = 63$	$n = 90$	$n = 30$	$n = 50$	$n = 41$
I don't know	0.5	0.8	0.0	0.0	1.1	0.0	2.0	0.0
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
$5.25 or less	8.7	11.6	18.8	7.9	5.6	16.7	12.0	7.3
$5.26–$6.00	40.5	54.6	43.8	46.0	35.6	56.7	52.0	56.1
$6.01–$7.00	34.1	19.8	18.8	34.9	38.9	10.0	20.0	26.8
$7.01–$8.00	9.7	8.3	15.6	7.9	8.9	6.7	10.0	7.3
More than $8.00	6.5	5.0	3.1	3.2	10.0	10.0	4.0	2.4
			$M^2 = 6.39$, $df = 1$, $p = .012$					
Work hours per week	$n = 185$	$n = 121$	$n = 32$	$n = 63$	$n = 90$	$n = 30$	$n = 50$	$n = 41$
Less than 5 hours	0.5	0.8	0.0	1.6	0.0	3.3	0.0	0.0
6–10 hours	10.3	14.9	6.3	7.9	13.3	16.7	10.0	19.5
11–20 hours	45.4	44.6	56.3	36.5	47.8	50.0	50.0	34.2
21–30 hours	35.7	32.2	28.1	47.6	30.0	26.7	34.0	34.2
31–40 hours	7.6	7.4	9.4	6.4	7.8	3.3	6.0	12.2
More than 40 hours	0.5	0.0	0.0	0.0	1.1	0.0	0.0	0.0

Note. Source: 1998 Education-To-Careers Follow-Up Survey.

Table J8

High School Work Experience by Tech Prep Status and Panel for San Mateo (CA)

	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
			’95	’96	’97	’95	’96	’97
Job status	*n* = 122	*n* = 113	*n* = 27	*n* = 41	*n* = 54	*n* = 31	*n* = 40	*n* = 42
Yes	75.4	69.9	85.2	73.2	72.2	74.2	60.0	76.2
No	24.6	30.1	14.8	26.8	27.8	25.8	40.0	23.8
Wages per hour	*n* = 91	*n* = 79	*n* = 23	*n* = 29	*n* = 39	*n* = 23	*n* = 24	*n* = 32
I don’t know	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0	2.2	3.8	0.0	0.0	5.1	4.4	8.3	0.0
$5.25 or less	11.0	21.5	8.7	17.2	7.7	17.4	25.0	21.9
$5.26–$6.00	36.3	20.3	47.8	44.8	23.1	13.0	20.8	25.0
$6.01–$7.00	30.8	21.5	30.4	27.6	33.3	26.1	12.5	25.0
$7.01–$8.00	11.0	12.7	8.7	6.9	15.4	13.0	20.8	6.3
More than $8.00	8.8	20.3	4.4	3.5	15.4	26.1	12.5	21.9
	$\chi^2 = 12.48$, $df = 5$, $p = .029$							
Work hours per week	*n* = 92	*n* = 79	*n* = 23	*n* = 30	*n* = 39	*n* = 23	*n* = 24	*n* = 32
Less than 5 hours	3.3	3.8	0.0	3.3	5.1	0.0	4.2	6.3
6–10 hours	13.0	16.5	4.4	20.0	12.8	21.7	8.3	18.8
11–20 hours	55.4	43.0	65.2	50.0	53.9	47.8	37.5	43.8
21–30 hours	21.7	29.1	26.1	23.3	18.0	26.1	37.5	25.0
31–40 hours	4.4	7.6	4.4	0.0	7.7	4.4	12.5	6.3
More than 40 hours	2.2	0.0	0.0	3.3	2.6	0.0	0.0	0.0

Note. Source: 1998 Education-To-Careers Follow-Up Survey.

Appendix K

Transition to College

Table K1

Transition to College by Tech Prep Status and Panel for East-Central Illinois (IL)

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
				'95	'96	'97	'95	'96	'97
Percentage transition to:	$n = 263$	$n = 137$	$n = 126$	$n = 4$	$n = 61$	$n = 72$	$n = 0$	$n = 53$	$n = 73$
2-year	72.6	79.6	65.1	25.0	68.9	91.7	0.0	64.2	65.8
Vocational	3.0	4.4	1.6	0.0	6.6	2.8	0.0	1.9	1.4
2-year and vocational	2.7	2.2	3.2	0.0	4.9	0.0	0.0	7.5	0.0
4-year	9.5	2.9	16.7	0.0	4.9	1.4	0.0	11.3	20.5
2- and 4-year	12.2	11.0	13.5	0.0	14.8	4.2	0.0	15.1	12.3
4-year and vocational	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2-year, 4-year, vocational	0.0	0.0	0.0	75.0	0.0	0.0	0.0	0.0	0.0
		$\chi^2 = 14.92$, $df = 2$, $p < .001$ (2-year, 4-year, both, see text)		$\chi^2 = 6.71$, $df = 2$, $p = .035$ (panel '95 omitted)					
Percentage with any 2-year attendance	87.4	92.7	81.7	100.0	88.5	95.8	0.0	86.8	78.1
		$\chi^2 = 7.18$, $df = 1$, $p = .007$							
Percentage with any 4-year attendance	21.7	13.9	30.2	75.0	19.7	5.6	0.0	26.4	32.9
		$\chi^2 = 10.26$, $df = 1$, $p = .001$		$\chi^2 = 6.22$, $df = 1$, $p = .013$ (panel '95 omitted)					

Note. Source: 1998 Education-To-Careers Follow-Up Survey. Supplemented with community college transcripts.

Table K2

Transition to College by Tech Prep Status and Panel for Metro

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
				'95	'96	'97	'95	'96	'97
Percentage transition to:	*n* = 252	*n* = 128	*n* = 124	*n* = 27	*n* = 35	*n* = 66	*n* = 33	*n* = 37	*n* = 54
2-year	40.5	35.9	45.2	40.7	42.9	30.3	36.4	48.6	48.1
Vocational	0.8	1.6	0.0	0.0	2.9	1.5	0.0	0.0	0.0
2-year and vocational	2.0	3.1	0.8	0.0	8.6	1.5	3.0	0.0	0.0
4-year	47.6	51.6	43.5	48.1	37.1	60.6	48.5	37.8	44.4
2- and 4-year	8.7	7.8	9.7	11.1	8.6	6.1	12.1	10.8	7.4
4-year and vocational	0.4	0.0	0.8	0.0	0.0	0.0	0.0	2.7	0.0
2-year, 4-year, vocational	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentage with any 2-year attendance	*n* = 252	*n* = 128	*n* = 124	*n* = 27	*n* = 35	*n* = 66	*n* = 33	*n* = 37	*n* = 54
	51.2	46.9	55.6	51.9	60.0	37.9	51.5	59.5	55.6
Percentage with any 4-year attendance	*n* = 252	*n* = 128	*n* = 124	*n* = 27	*n* = 35	*n* = 66	*n* = 33	*n* = 37	*n* = 54
	56.7	59.4	54.0	59.3	45.7	66.7	60.6	51.4	51.9

Note. Source: 1998 Education-To-Careers Follow-Up Survey. Supplemented with community college transcripts.

Table K3

Transition to College by Tech Prep Status and Panel for Hillsborough (FL)

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
				'95	'96	'97	'95	'96	'97
Percentage transition to:	$n = 211$	$n = 91$	$n = 120$	$n = 9$	$n = 28$	$n = 54$	$n = 14$	$n = 45$	$n = 61$
2-year	46.9	53.9	41.7	88.9	57.1	46.3	28.6	37.8	47.5
Vocational	3.3	5.5	1.7	0.0	0.0	9.3	0.0	2.2	1.6
2-year and vocational	4.7	6.6	3.3	0.0	3.6	9.3	0.0	6.7	1.6
4-year	16.1	9.9	20.8	0.0	10.7	11.1	35.7	17.8	19.7
2- and 4-year	28.4	24.2	31.7	11.1	28.6	24.1	28.6	35.6	29.5
4-year and vocational	0.5	0.0	0.8	0.0	0.0	0.0	7.1	0.0	0.0
2-year, 4-year, vocational	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				$\chi^2 = 7.70, df = 2, p = .02$					
Percentage with any 2-year attendance	80.1	84.6	76.7	100.0	89.3	79.6	57.1	80.0	78.7
Percentage with any 4-year attendance	45.0	34.1	53.3	11.1	39.3	35.2	71.4	53.3	49.2
		$\chi^2 = 7.76, df = 1, p = .005$							

Note. Source: 1998 Education-To-Careers Follow-Up Survey. Supplemented with community college transcripts.

Table K4

Transition to College by Tech Prep Status and Panel for Golden Crescent (TX)

Variables	**Total**	**Tech prep**	**Non-tech prep**	**Tech prep by panel**			**Non-tech prep by panel**		
				’95	**’96**	**’97**	**’95**	**’96**	**’97**
Percentage transition to:	*n* = 184	*n* = 108	*n* = 76	*n* = 15	*n* = 33	*n* = 60	*n* = 12	*n* = 26	*n* = 38
2-year	52.2	55.6	47.4	40.0	54.5	60.0	41.7	30.8	60.5
Vocational	2.2	0.9	4.0	0.0	0.0	1.7	0.0	11.5	0.0
2-year and vocational	3.8	2.8	5.3	6.7	3.0	1.7	16.7	3.8	2.6
4-year	7.1	7.4	6.6	0.0	6.1	10.0	8.3	7.7	5.3
2- and 4-year	34.8	33.3	36.8	53.3	36.4	26.7	33.3	46.2	31.6
4-year and vocational	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2-year, 4-year, vocational	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentage with any 2-year attendance	90.8	91.7	89.5	100.0	93.9	88.3	91.7	80.8	94.7
Percentage with any 4-year attendance	41.8	40.7	43.4	53.3	42.4	36.7	41.7	53.8	36.8

Note. Source: 1998 Education-To-Careers Follow-Up Survey. Supplemented with community college transcripts.

Table K5

Transition to College by Tech Prep Status and Panel for Miami Valley (OH)

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel '95	Tech prep by panel '96	Tech prep by panel '97	Non-tech prep by panel '95	Non-tech prep by panel '96	Non-tech prep by panel '97
Percentage transition to:	*n* = 182	*n* = 94	*n* = 88	*n* = 6	*n* = 26	*n* = 62	*n* = 7	*n* = 24	*n* = 57
2-year	61.5	82.9	38.6	50.0	76.9	88.7	28.6	41.7	38.6
Vocational	2.2	0.0	4.6	0.0	0.0	0.0	0.0	4.2	5.3
2-year and vocational	0.6	0.0	1.1	0.0	0.0	0.0	0.0	0.0	1.8
4-year	20.9	1.1	42.1	0.0	3.8	0.0	57.1	41.7	40.4
2- and 4-year	14.8	16.0	13.6	50.0	19.2	11.3	14.3	12.5	14.0
4-year and vocational	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2-year, 4-year, vocational	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		$\chi^2 = 50.40$, *df* =2, $p < .001$ (collapsed voc-related and without voc only)							
Percentage with any 2-year attendance	76.9	98.9	53.4	100.0	96.2	100.0	42.9	54.2	54.4
		$\chi^2 = 53.07$, *df* = 1, $p < .001$							
Percentage with any 4-year attendance	35.7	17.0	55.7	50.0	23.1	11.3	71.4	54.2	54.4
		$\chi^2 = 29.59$, *df* = 1, $p < .001$							

Note. Source: 1998 Education-To-Careers Follow-Up Survey. Supplemented with community college transcripts.

Table K6

Transition to College by Tech Prep Status and Panel for Mt. Hood (OR)

				Tech prep by panel			Non-tech prep by panel		
Variables	**Total**	**Tech prep**	**Non-tech prep**	**'95**	**'96**	**'97**	**'95**	**'96**	**'97**
Percentage transition to:	*n* = 159	*n* = 77	*n* = 82	*n* = 16	*n* = 27	*n* = 34	*n* = 28	*n* = 33	*n* = 21
2-year	58.5	63.6	53.7	68.8	74.1	52.9	57.1	48.5	57.1
Vocational	1.9	1.3	2.4	0.0	0.0	2.9	3.6	3.0	0.0
2-year and vocational	3.1	5.2	1.2	6.3	3.7	5.9	3.6	0.0	0.0
4-year	8.8	5.2	12.2	0.0	7.4	5.9	14.3	9.1	14.3
2- and 4-year	26.4	23.4	29.3	25.0	14.8	29.4	17.9	39.4	28.6
4-year and vocational	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2-year, 4-year, vocational	1.3	1.3	1.2	0.0	0.0	2.9	3.6	0.0	0.0
Percentage with any 2-year attendance	89.3	93.5	85.4	100.0	92.6	91.2	82.1	87.9	85.7
Percentage with any 4-year attendance	36.5	29.9	42.7	25.0	22.2	38.2	35.7	48.5	42.9

Note. Source: 1998 Education-To-Careers Follow-Up Survey. Supplemented with community college transcripts.

Table K7

Transition to College by Tech Prep Status and Panel for Guilford County (NC)

				Tech prep by panel			Non-tech prep by panel		
Variables	**Total**	**Tech prep**	**Non-tech prep**	**’95**	**’96**	**’97**	**’95**	**’96**	**’97**
Percentage transition to:	*n* = 308	*n* = 182	*n* = 126	*n* = 32	*n* = 63	*n* = 87	*n* = 35	*n* = 51	*n* = 40
2-year	30.8	36.3	23.0	40.6	39.7	32.2	14.3	23.5	30.0
Vocational	2.3	2.2	2.4	6.3	1.6	1.1	5.7	0.0	2.5
2-year and vocational	2.3	1.1	4.0	0.0	1.6	1.1	8.6	0.0	5.0
4-year	53.6	50.0	58.7	40.6	42.9	58.6	60.0	56.9	60.0
2- and 4-year	10.7	10.4	11.1	12.5	14.3	6.9	11.4	17.6	2.5
4-year and vocational	0.3	0.0	0.8	0.0	0.0	0.0	0.0	2.0	0.0
2-year, 4-year, vocational	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentage with any 2-year attendance	43.8	47.8	38.1	53.1	55.6	40.2	34.3	41.2	37.5
Percentage with any 4-year attendance	64.6	60.4	70.6	53.1	57.1	65.5	71.4	76.5	62.5

Note. Source: 1998 Education-To-Careers Follow-Up Survey. Supplemented with community college transcripts.

Table K8

Transition to College by Tech Prep Status and Panel for San Mateo (CA)

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
				’95	’96	’97	’95	’96	’97
Percentage transition to:	*n* = 229	*n* = 119	*n* = 110	*n* = 26	*n* = 40	*n* = 53	*n* = 31	*n* = 39	*n* = 40
2-year	48.0	52.1	43.6	38.5	60.0	52.8	45.2	30.8	55.0
Vocational	0.4	0.0	0.9	0.0	0.0	0.0	0.0	2.6	0.0
2-year and vocational	0.9	0.8	0.9	0.0	0.0	1.9	3.2	0.0	0.0
4-year	10.9	9.2	12.7	19.2	5.0	7.5	6.5	17.9	12.5
2- and 4-year	39.3	37.8	40.9	42.3	35.0	37.7	41.9	48.7	32.5
4-year and vocational	0	0	0	0	0	0	0	0	0
2-year, 4-year, vocational	0.4	0.0	0.9	0.0	0.0	0.0	3.2	0.0	0.0
Percentage with any 2-year attendance	88.7	90.8	86.4	80.8	95.0	92.5	93.5	79.5	87.5
Percentage with any 4-year attendance	50.7	47.1	54.5	61.5	40.0	45.3	51.6	66.7	45.0

Note. Source: 1998 Education-To-Careers Follow-Up Survey. Supplemented with community college transcripts.

Appendix L

Continuing Tech Prep Participation

Table L1
Notes on Operational Definitions of Continuing Tech Prep Students by Consortium

Consortium	Definition of Continuing Tech Prep
East-Central Illinois (IL)	The lead college in this consortium, Danville Area Community College (DACC), publishes lists of tech prep career paths in its college catalog. Drawing from catalogs published during the period of this study, high school course guides, and other supporting materials, plus our team's field notes, project staff constructed an operational definition for *continuing tech prep (CTP) participant*. This definition is applied to classify East-Central Illinois students after comparing and analyzing each individual student's high school and college transcripts. The operational definition used for East-Central Illinois follows: 1. Overall, a CTP demonstrated evidence via transcript records that his/her current major was associated with a tech prep career path, and the degree sought was an Associate in Applied Science (AAS) degree affiliated with one of the consortium's tech prep career paths. Students did not necessarily have to choose the exact same career path as shown on their high school transcripts, but they must have continued at the college level in a career path identified by the consortium as part of the local tech prep initiative. Continuation was usually confirmed by indication of current major'on the student's transcript that was in alignment with one of the consortium's tech prep career paths, as well as enrollment and completion of course work commensurate with those paths. 2. If the college major was not designated on the student's transcript and he/she had accumulated 30 hours or more on the college transcript, he/she was classified as CTP if the composition and sequence of courses taken fit one of the consortium's tech prep career paths, and at least 25% of courses taken were appropriate CTE courses for the inferred career path. 3. If current major was not designated on the student's transcript and he/she had accumulated less than 30 hours on the college transcript, he/she was classified as CTP if his/her transcript revealed that the student was taking at least a reasonable proportion of appropriate CTE courses. The number of CTE courses taken was dependent upon the total number of courses taken, since some students may have taken only a few hours total. All students who fell into this category were reviewed independently by two staff persons, and only those students who both persons thought should be classified as CTP were classified as such. (This same process for classifying students as CTP, if under 30 hours, was repeated in each site.) 4. Students were classified as Not CTP (NCTP) if their current major designated a tech prep career path, but he/she had taken no CTE courses that fit the major, or if the student was not majoring in a designated tech prep path and had not taken courses in CTE. 5. Students were classified as Unknown if they had taken less than 30 hours and we had no information on either CTE courses or current major. NOTE: In the tables in Appendix L, all students classified as NO are a combination of students classified as NCTP and Unknown, since interest in the group failing to continue tech prep at the postsecondary level is minimal in this analysis.

Consortium	Definition of Continuing Tech Prep
	Researcher notes: Overall, tech prep participants in this site seemed to be majoring in a tech prep career path when they transitioned to the lead college, and they tended to be taking CTE courses early in their programs of study. Therefore, the relationship between college major and course work seemed fairly tight in this consortium.
Hillsborough (FL)	Drawing heavily on the case study report by William Reger in Bragg et al. (1999) because it provides a detailed list of articulation agreements between the secondary district's high schools and the Hillsborough (FL) Community College District, project staff constructed an operational definition of CTP closely paralleling the CTP definition used for East-Central Illinois. Additional documents, reports, and records were used to construct the definition for this site, similar to other sites. Based on a review of each student's high school and college transcripts, we classified students as CTP as follows: 1. Because college transcripts in this consortium did not indicate the current major, we used the designated degree sought as an indicator of status. This information was combined with review of individual student transcripts to identify course-taking in a tech prep career path at the college that was aligned with the student's high school tech prep program. Other general specifications were similar to East-Central Illinois. 2. If 30 hours or more, followed the same rule as for East-Central Illinois. 3. If less than 30 hours, followed the same rule as for East-Central Illinois. 4. Students were classified as NCTP if they had taken more than 30 credit hours and had taken no CTE courses, or if less than 25% of the course work was in the CTE area appropriate to the inferred career path. Also, if over 30 credit hours, designated as NCTP if the student had not taken a concentrated amount of course work in one CTE area (usually taking only general CTE courses that many students take.) 5. Students classified as Unknown if they had less than 30 credit hours and, based on actual course work, it was not readily apparent that they were pursuing a tech prep career path (course work not concentrated in any one area). *Researcher notes:* It was more difficult to classify students in this site than in East-Central Illinois because we could only use course work to do the classification, and students were not very consistent in terms of their CTE course-taking (not taken early on, or not taking courses consistently from semester to semester).
Golden Crescent (TX)	Victoria College, the lead college in the Golden Crescent (TX) consortium, provides a website that shows eight tech prep career paths for the consortium. This information was combined with additional supporting records, high school and college catalogs, and documents to construct an operational definition similar to other sites. Classification of students as CTP was done as follows: 1. College transcripts showed current major in this site, but we found a substantial amount of mismatch between the current major and course-taking. We therefore weighted actual course-taking higher than current major in our review of individual student transcripts, to identify tech prep career path taken.

Consortium	Definition of Continuing Tech Prep
	2. Student with over 30 credit hours is classified as CTP if he/she is majoring in a tech prep career path and has transcripted course work that documents tech prep courses. 3. For students with less than 30 hours, followed definition used in East-Central Illinois. 4. Students were classified as NCTP if their major was not part of a tech prep career path and/or if their course work did not show any tech prep courses (for those with less than 30 hours). 5. Students were classified as Unknown when their major was not given on the transcript and/or when they had taken less than 30 credit hours and their course work did not show any CTE courses. *Researcher notes:* In this consortium, a substantial proportion of students claimed general studies as their major on the transcript—but the major was often not reflected in the course work. We concluded that if we relied too heavily on college major in this classification, there would have been an unreasonable amount of misclassification, so we gave more weight to actual course-taking. Also, students were more likely to take general education during the first 30 hours, making it more difficult to classify students during this period. Consequently, the percentage of students classified as Unknown was higher (33%) in this site than most others. Note that this group is combined with NCTP as the NO group in table L4.
Miami Valley (OH)	The lead college, Sinclair Community College, in the Miami Valley (OH) consortium, shows a list of tech prep articulation agreements on its web site, and similar information was contained in our project files and field notes. Using this information, we reviewed students' high school and college transcripts, and identified CTP students as follows: 1. Overall, the procedure for classifying as CTP in this consortium followed the process used in East-Central Illinois, except that students in the Industrial Engineering Technology (IET) program (a program with substantial visibility and numbers of students in this consortium) who were matriculating to the college took an IET Tech Prep Seminar course early in their studies. When this course was completed, we were able to identify these students as CTP with a high degree of confidence. 2. Students classified as NCTP were those who were not majoring in an articulated tech prep pathway, and their course work did not show any CTE courses. 3. Students were classified as Unknown when their major was uncertain and/or their courses did not follow a designated tech prep career path. *Researcher notes:* A high percentage of students were classified as CTP because there was substantial information on college major that fit the tech prep career pathway, and this information seemed to accurately reflect students' course-taking in these paths. Even when students had accumulated only a small number of courses in college, CTP students took CTE courses early in their programs of study, making it more obvious that they were continuing to pursue tech prep programs. There were relatively few Unknowns in this site because of better information and the close connection between major and course work.

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Consortium	**Definition of Continuing Tech Prep**
Mt. Hood (OR)	1. Information on active tech prep programs was available from the Mt. Hood (OR) consortium and Mt. Hood (OR) Community College, the lead college in this consortium. Supporting information was also drawn from field notes in the CC&B project files. Using this information and student transcripts, we constructed an operational definition for Mt. Hood (OR) similar to the one used in East-Central Illinois (because information on current major was posted on the transcript). Classification as CTP, NCTP, and Unknown all followed closely with the East-Central Illinois categories, with no noteworthy exceptions. *Researcher notes:* Information on current major was available on college transcripts in this consortium, and approximately 30% of possible CTPs had general studies designated as major on their transcripts. In this analysis, we weighted course work more heavily than in some other sites because we knew that a substantial percentage of tech prep participants designated general studies as their college major. By scrutinizing courses on transcripts, we hoped to sort out CTP and NCTP groups more accurately, and we think this has been done by using the specified classification system reported here.
Guilford County (NC)	2. Information on career pathways was available in secondary and college-level catalogues, with Guilford Technical Community College supplementing these materials with additional information from field notes. Classification decisions used for this consortium following the protocol used with students in Golden Crescent (TX), with no noteworthy exceptions. *Researcher notes:* Because the tech prep career paths were defined broadly in this consortium, we reviewed transcripts (high school and college) to attempt to align students' current majors with their college-level course-taking to classify them as CTP. Review of actual courses taken revealed some mismatch between course-taking and current major, so we weighted course-taking more highly. Also, decisions about whether course-taking fit within a particular career pathway was sometimes difficult. Moreover, in this site we found CTE course-taking at the college level that did not appear to fit any designated tech prep career path, and students taking these courses were not classified as CTP. This decision may be erroneous, but it was consistent with the approach used in other sites, though the phenomenon was not as evident in others.

San Mateo (CA)	Articulation agreements and a list of career paths was available for the San Mateo (CA) consortium, based on a case study report prepared by Donna Dare and Carolyn Dornsife (Bragg et al., 1999) and the catalogs of the main community college district in this consortium, the San Mateo (CA) Community College District. We also reviewed student transcripts to identify students who were following tech prep career pathways. Course-taking was the major data source, as no college major was provided on the transcript. Other aspects of the CTP classification follow: 1. Classification as CTP paralleled most closely the process used for Hillsborough (FL), plus students who had transcripted credits by exam were flagged as CTP. 2. Classification as NCTP when the only credits appearing on the college transcript were those appearing through credit by exam, and no CTE courses were taken, including when over 30 hours credit. This method following the process used in Hillsborough (FL). 3. The Unknown category was applied when the student had taken less than 30 credit hours and no CTE courses had been taken, and/or when the student had taken less than 30 hours and only CTE courses were taken by credit by exam. Except for the credit by exam situation, the remainder of the process followed closely with the process used for Hillsborough (FL). *Researcher notes:* Most students do not have a college major posted on the transcript, so we had to rely primarily on courses taken, as appearing on the college transcript. Courses that were part of tech prep career paths were identified and flagged on student transcripts; however, this process was complicated because not all tech prep programs are offered in all high schools. To simplify, if the articulation agreement existed between any high school and the community college in the district, we assumed it applied to all. Though this process will undoubtedly result in some over-counting, it was a necessary step to carry out the work with available resources. Also, though some students may be counted now when they are not technically CTP, it is likely that articulation agreements started in one secondary school will eventually gravitate to other schools in the district, making the operational definition reasonable in the not-too-distant future.

Table L2

Continuing Tech Prep Participation by Tech Prep Status and Panel for East-Central Illinois (IL)

	High school tech prep participants	**Tech prep by panel**	
		’96	**’97**
Percentage continuing tech prep at community college	*n* = 292	*n* = 130	*n* = 162
Yes	45.9	46.2	45.7
No	54.1	53.8	54.3
	Community college tech prep participants	**Tech prep by panel**	
		’96	**’97**
Percentage continuing tech prep at community college	*n* = 178	*n* = 81	*n* = 97
Yes	74.7	74.1	75.3
No	25.3	25.9	24.7

Note. Source: community college transcripts.

Table L3

Continuing Tech Prep Participation by Tech Prep Status and Panel for Hillsborough (FL)

	High school tech prep participants	**Tech prep by panel**		
		’95	**’96**	**’97**
Percentage continuing tech prep at community college	*n* = 302	*n* = 47	*n* = 103	*n* = 152
Yes	22.5	23.4	17.5	25.7
No	77.5	76.6	82.5	74.3
	Community college tech prep participants	**Tech prep by panel**		
		’95	**’96**	**’97**
Percentage continuing tech prep at community college	*n* = 160	*n* = 27	*n* = 47	*n* = 86
Yes	42.5	40.7	38.3	45.4
No	57.5	59.3	61.7	54.6

Note. Source: community college transcripts.

Table L4

Continuing Tech Prep Participation by Tech Prep Status and Panel for Golden Crescent (TX)

	High school tech prep participants	**Tech prep by panel** '95	'96	'97
Percentage continuing tech prep at community college	*n* = 296	*n* = 49	*n* = 106	*n* = 141
Yes	36.2	49.0	33.0	34.0
No	63.8	51.0	67.0	66.0
	Community college tech prep participants	**Tech prep by panel** '95	'96	'97
Percentage continuing tech prep at community college	*n* = 191	*n* = 36	*n* = 63	*n* = 92
Yes	56.0	66.7	55.6	52.2
No	44.0	33.3	44.4	47.8

Note. Source: community college transcripts.

Table L5

Continuing Tech Prep Participation by Tech Prep Status and Panel for Miami Valley (OH)

	High school tech prep participants	**Tech prep by panel** '96	'97
Percentage continuing tech prep at community college	*n* = 192	*n* = 82	*n* = 110
Yes	88.5	86.6	90.0
No	11.5	13.4	10.0
	Community college tech prep participants	**Tech prep by panel** '96	'97
Percentage continuing tech prep at community college	*n* = 179	*n* = 75	*n* = 104
Yes	95.0	94.7	95.2
No	5.0	5.3	4.8

Note. Source: community college transcripts.

Table L6

Continuing Tech Prep Participation by Tech Prep Status and Panel for Mt. Hood (OR)

	High school tech prep participants	Tech prep by panel		
		'95	'96	'97
Percentage continuing tech prep at community college	$n = 251$	$n = 57$	$n = 95$	$n = 99$
Yes	31.1	40.4	29.5	27.3
No	68.9	59.6	70.5	72.7

	Community college tech prep participants	Tech prep by panel		
		'95	'96	'97
Percentage continuing tech prep at community college	$n = 145$	$n = 31$	$n = 51$	$n = 63$
Yes	53.8	74.2	54.9	42.9
No	46.2	25.8	45.1	57.1
		$\chi^2 = 8.25, df = 2, p = .002$		

Note. Source: community college transcripts.

Table L7

Continuing Tech Prep Participation by Tech Prep Status and Panel for Guilford County (NC)

	High school tech prep participants	Tech prep by panel		
		'96	'97	'98
Percentage continuing tech prep at community college	$n = 412$	$n = 99$	$n = 135$	$n = 178$
Yes	16.5	17.2	20.0	13.5
No	83.5	82.8	80.0	86.5

	Community college tech prep participants	Tech prep by panel		
		'96	'97	'98
Percentage continuing tech prep at community college	$n = 126$	$n = 34$	$n = 45$	$n = 47$
Yes	54.0	50.0	60.0	51.1
No	46.0	50.0	40.0	48.9

Note. Source: community college transcripts.

Table L8

Continuing Tech Prep Participation by Tech Prep Status and Panel for San Mateo (CA)

	High school tech prep participants	**Tech prep by panel** '95	'96	'97
Percentage continuing tech prep at community college	*n* = 314	*n* = 76	*n* = 119	*n* = 119
Yes	37.9	44.7	34.4	37.0
No	62.1	55.3	65.6	63.0
	Community college tech prep participants	**Tech prep by panel** '95	'96	'97
Percentage continuing tech prep at community college	*n* = 225	*n* = 53	*n* = 84	*n* = 88
Yes	52.9	64.2	48.8	50.0
No	47.1	35.9	51.2	50.0

Note. Source: community college transcripts.

Appendix M

College Placement By Tech Prep Status

Table M1

College Placement by Tech Prep Status and Consortium

	East-Central Illinois (IL) (*n* = 542)		Metro (*n* = 606)		Hillsborough (FL) (*n* = 594)		Golden Crescent (TX) (*n* = 583)		Miami Valley (OH) (*n* = 275)		Mt. Hood (OR) (*n* = 484)		Guilford County (NC) (*n* = 723)	
	Tech prep	**Non-tech prep**	**Tech prep**	**Non-tech prep**	**Tech prep**	**Non-tech prep**	**Tech prep**	**Non-tech prep**	**Tech prep**	**Non-tech prep**	**Tech prep**	**Non-tech prep**	**Tech prep**	**Non-tech prep**
Student transition based on HS and CC transcripts														
High school	285	257	298	308	298	296	295	288	175	100	249	235	412	311
Community College	177 (60.6)	138 (53.7)	78 (25.3)	62 (19.6)	160 (53.2)	181 (61.2)	190 (64.4)	151 (52.1)	175 (100)	56 (56.0)	157 (63.1)	138 (58.7)	125 (30.3)	75 (24.1)
χ^2	2.68		2.92		3.89		9.16		127.92		0.89		3.43	
p	0.102		0.088		0.049		0.003		< 0.001		0.345		0.064	
CC student placement information or not														
Yes	148	118	77	54	111	126	181	142	175	38	102	95	91	61
No	29 (16.4)	20 (14.5)	1 (1.3)	8 (12.9)	49 (30.6)	55 (30.4)	9 (4.7)	9 (5.9)	0 (0.0)	18 (32.1)	55 (35.0)	43 (31.2)	34 (27.2)	14 (18.7)
Student placement decision (total – transfer standard)														
Ready	43 (29.1)	52 (44.1)	—	—	15 (13.2)	27 (20.3)	94 (51.9)	72 (50.7)	52 (29.7)	6 (15.8)	12 (11.5)	8 (8.3)	13 (14.3)	8 (13.1)
Not ready	105 (70.9)	66 (55.9)	—	—	99 (86.8)	106 (79.7)	87 (48.1)	70 (49.3)	123 (70.3)	32 (84.2)	92 (88.5)	89 (91.8)	78 (85.7)	53 (86.9)
χ^2	6.45		—		2.22		0.048		3.06		0.61		0.04	
p	0.011		—		0.136		0.826		0.081		0.43		0.838	

Table M1 (continued)

	East-Central Illinois (IL) (*n* = 542)		Metro (*n* = 606)		Hillsborough (FL) (*n* = 594)		Golden Crescent (TX) (*n* = 583)		Miami Valley (OH) (*n* = 275)		Mt. Hood (OR) (*n* = 484)		Guilford County (NC) (*n* = 723)	
	Tech prep	**Non-tech prep**	**Tech prep**	**Non-tech prep**	**Tech prep**	**Non-tech prep**	**Tech prep**	**Non-tech prep**	**Tech prep**	**Non-tech prep**	**Tech prep**	**Non-tech prep**	**Tech prep**	**Non-tech prep**
Student placement decision (total – CTE standard)														
Ready	82 (55.4)	78 (66.1)	56 (72.7)	34 (63.0)	45 (39.5)	80 (60.2)	142 (78.5)	108 (76.1)	91 (55.0)	14 (36.8)	74 (71.2)	59 (60.8)	47 (51.7)	17 (27.9)
Not ready	66 (44.6)	40 (33.9)	21 (27.3)	20 (37.0)	69 (60.5)	53 (39.9)	39 (21.5)	34 (23.9)	84 (48.0)	24 (63.2)	30 (28.9)	38 (39.2)	44 (48.3)	44 (70.1)
χ^2	3.13		1.41		10.499		0.26		2.87		2.39		8.47	
p	0.077		0.236		0.001		0.609		0.090		0.122		0.004	
Student placement decision (mathematics – CTE standard)														
Ready	107 (72.3)	88 (74.6)	72 (93.5)	46 (85.2)	54 (50.5)	103 (79.8)	150 (82.9)	114 (80.3)	105 (60.0)	19 (50.0)	77 (76.2)	91 (74.0)	60 (65.9)	27 (44.3)
Not ready	41 (27.7)	30 (25.4)	5 (6.5)	8 (14.8)	53 (49.5)	26 (20.2)	31 (17.1)	28 (19.7)	70 (40.0)	19 (50.0)	24 (23.8)	25 (26.0)	31 (34.1)	34 (55.7)
χ^2	0.17		2.46		22.67		0.36		1.28		0.14		7.01	
p	0.676		0.117		< 0.001		0.550		0.257		0.711		0.008	
Student placement decision (mathematics – transfer standard)														
Ready	71 (48.0)	64 (54.2)	—	—	13 (12.2)	27 (20.9)	95 (52.5)	72 (50.7)	58 (33.1)	9 (23.7)	10 (9.9)	9 (9.4)	16 (17.6)	13 (21.3)
Not ready	77 (52.0)	54 (45.8)	—	—	94 (87.9)	102 (79.1)	86 (47.5)	70 (49.3)	117 (66.9)	29 (76.3)	90 (90.1)	87 (90.6)	75 (82.4)	48 (78.7)
χ^2	1.03		—		3.20		0.10		1.30		0.016		0.33	
p	0.310		—		0.074		0.750		0.255		0.90		0.566	

Table M1 (continued)

	East-Central Illinois (IL) (*n* = 542)		Metro (*n* = 606)		Hillsborough (FL) (*n* = 594)		Golden Crescent (TX) (*n* = 583)		Miami Valley (OH) (*n* = 275)		Mt. Hood (OR) (*n* = 484)		Guilford County (NC) (*n* = 723)	
	Tech prep	Non-tech prep	Tech prep	Non-tech prep	Tech prep	Non-tech prep	Tech prep	Non-tech prep	Tech prep	Non-tech prep	Tech prep	Non-tech prep	Tech prep	Non-tech prep
Student placement decision (reading)														
Ready	118 (79.7)	98 (83.1)	67 (87.0)	46 (85.2)	74 (66.7)	95 (75.4)	161 (88.9)	127 (89.4)	148 (84.6)	20 (52.6)	91 (89.2)	83 (87.4)	78 (85.7)	43 (70.5)
Not ready	30 (20.3)	20 (16.9)	10 (13.0)	8 (14.8)	37 (33.3)	31 (24.6)	20 (11.1)	15 (10.6)	20 (15.4)	18 (47.4)	11 (10.8)	12 (12.6)	13 (14.3)	18 (29.5)
χ^2	0.474		0.09		2.20		0.02		19.11		0.16		5.21	
p	0.491		0.765		0.138		0.889		< 0.001		0.687		0.022	
Student placement decision (writing – CTE standard)														
Ready	129 (87.2)	104 (88.1)	63 (81.8)	36 (66.7)	73 (65.8)	96 (75.0)	166 (91.7)	128 (90.1)	137 (78.3)	21 (55.3)	91 (89.2)	79 (83.2)	66 (72.5)	41 (67.2)
Not ready	19 (12.8)	14 (11.9)	14 (18.2)	18 (33.3)	38 (34.2)	32 (25.0)	15 (8.3)	14 (9.9)	38 (21.7)	17 (44.7)	11 (10.8)	16 (16.8)	25 (27.5)	20 (32.8)
χ^2	0.06		3.95		2.45		0.24		8.64		1.53		0.49	
p	0.811		0.047		0.118		0.624		0.003		0.217		0.482	
Student placement decision (writing – transfer standard)														
Ready	83 (56.1)	84 (71.2)			Same as CTE		Same as CTE		Same as CTE		38 (37.3)	42 (44.2)	Same as CTE	
Not ready	65 (43.9)	34 (28.8)									64 (62.7)	53 (55.8)		
χ^2	6.41										0.99			
p	0.011										0.321			

Note. Source: institutional records and community college transcripts.

Appendix N

College Completion and Persistence

Table N1

College Enrollment, Cumulative Hours and Credentials Earned by Tech Prep Status and Panel for East-Central Illinois (IL)

				Tech prep by panel		Non-tech prep by panel	
Variables	**Total**	**Tech prep**	**Non-tech prep**	**'96**	**'97**	**'96**	**'97**
Enrolled at community college	$n = 549$	$n = 292$	$n = 257$	$n = 130$	$n = 162$	$n = 114$	$n = 143$
Percent enrolled	57.4	61.0	53.3	62.3	59.9	55.3	51.7
Percent not enrolled	42.6	39.0	46.7	37.7	40.1	44.7	48.3
Total of cumulative hours earned (non-remedial)	$n = 315$	$n = 178$	$n = 137$	$n = 81$	$n = 97$	$n = 63$	$n = 74$
Mean	32.11	35.44	27.80	39.05	32.42	28.14	27.50
Standard deviation	27.31	27.93	25.95	27.96	27.69	28.78	23.48
		$t = 2.48$, $df = 313$, $p = .014$					
Cumulative hours earned at community college (ratio of remedial to total)	$n = 277$	$n = 158$	$n = 119$	$n = 74$	$n = 84$	$n = 51$	$n = 68$
Mean proportion	.07	.06	.08	.04	.07	.10	.06
Standard deviation	.16	.15	.16	.11	.19	.21	.12
Cumulative college-level hours (ratio of earned to attempted)	$n = 313$	$n = 178$	$n = 135$	$n = 81$	$n = 97$	$n = 63$	$n = 72$
Mean proportion	.68	.70	.65	.73	.67	.57	.72
Standard deviation	.34	.33	.34	.31	.35	.37	.30
						$F = 7.075$, $df = 1, 133$, $p = .009$	
Cumulative remedial hours (ratio of earned to attempted)	$n = 80$	$n = 43$	$n = 37$	$n = 20$	$n = 23$	$n = 18$	$n = 19$
Mean proportion	.77	.77	.76	.78	.76	.72	.80
Standard deviation	.39	.39	.40	.38	.40	.42	.38

Table N1 (continued)

Variables	**Total**	**Tech prep**	**Non-tech prep**	**Tech prep by panel**		**Non-tech prep by panel**	
				'96	**'97**	**'96**	**'97**
Credential earned	$n = 315$	$n = 178$	$n = 137$	—	—	—	—
AA	23 (7.3)	11 (6.2)	12 (8.8)	—	—	—	—
AAS	31 (9.8)	24 (13.5)	7 (5.1)	—	—	—	—
AA + AAS	—	0 (0.0)	0 (0.0)	—	—	—	—
Certificate	1 (.3)	0 (0.0)	1 (.7)	—	—	—	—
AA + certificate	—	0 (0.0)	0 (0.0)	—	—	—	—
AAS + certificate	2 (.6)	1 (.6)	1 (.7)	—	—	—	—
TOTAL: Earned degree or certificate	57 (18.0)	36 (20.2)	21 (15.3)	22 (27.2)	14 (14.4)	12 (19.0)	9 (12.2)
None, still enrolled	44 (14.0)	25 (14.0)	19 (13.9)	5 (6.2)	20 (20.6)	7 (11.1)	12 (16.2)
None, not enrolled	214 (67.9)	117 (66.7)	97 (70.8)	54 (66.7)	63 (64.9)	44 (69.8)	53 (71.6)
				$\chi^2 = 10.114$, $df = 2$, $p = .006$			

Note. Source: community college transcripts.

Table N2

First-Term Enrollment by Tech Prep Status and Panel for East-Central Illinois (IL)

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel '96	Tech prep by panel '97	Non-tech prep by panel '96	Non-tech prep by panel '97
First-term hours earned at community college (ratio of remedial to total)	*n* = 266	*n* = 155	*n* = 111	*n* = 73	*n* = 82	*n* = 49	*n* = 62
Mean proportion	.11	.10	.13	.09	.11	.16	.11
Standard deviation	.24	.22	.26	.19	.24	.29	.23
First-term college-level hours (ratio of earned to attempted)	*n* = 312	*n* = 177	*n* = 135	*n* = 80	*n* = 97	*n* = 63	*n* = 72
Mean proportion	.72	.74	.69	.79	.69	.62	.74
Standard deviation	.37	.36	.39	.34	.38	.41	.36
First-term remedial hours (ratio of earned to attempted)	*n* = 78	*n* =4 3	*n* = 35	*n* = 20	*n* = 23	*n* = 17	*n* = 18
Mean proportion	.78	.78	.77	.80	.77	.77	.78
Standard deviation	.42	.41	.43	.41	.42	.44	.43

Note. Source: community college transcripts.

Table N3

College Enrollment, Cumulative Hours, and Credentials Earned by Tech Prep Status and Panel for Metro

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
				'95	'96	'97	'95	'96	'97
Enrolled at community college	$n = 624$	$n = 308$	$n = 316$	$n = 81$	$n = 94$	$n = 133$	$n = 103$	$n = 93$	$n = 120$
Percent enrolled	22.3	24.7	19.9	22.2	34.0	19.5	23.3	23.7	14.2
Percent not enrolled	77.7	75.3	80.1	77.8	66.0	80.5	76.7	76.3	85.8
					$\chi^2 = 6.58$, $df = 2$, $p = .037$				
Total of cumulative hours earned (non-remedial)	$n = 139$	$n = 76$	$n = 63$	$n = 18$	$n = 32$	$n = 26$	$n = 24$	$n = 22$	$n = 17$
Mean	30.44	33.38	26.90	50.89	28.66	27.08	32.10	25.27	21.65
Standard deviation	31.06	30.78	31.28	37.00	29.88	22.66	38.27	29.51	21.66
					$F = 4.157$, $df = 2, 73$, $p = .02$				
Cumulative hours earned at community college (ratio of remedial to total)	$n = 125$	$n = 69$	$n = 56$	$n = 18$	$n = 26$	$n = 25$	$n = 20$	$n = 20$	$n = 16$
Mean proportion	.18	.15	.22	.11	.14	20	.18	.23	.26
Standard deviation	.25	.24	.26	.13	.26	.27	.24	.26	.30
Cumulative college-level hours (ratio of earned to attempted)	$n = 138$	$n = 75$	$n = 63$	$n = 18$	$n = 31$	$n = 26$	$n = 24$	$n = 22$	$n = 17$
Mean proportion	.61	.63	.58	.78	.54	.64	.63	.53	.57
Standard deviation	.33	.32	.35	.22	.34	.32	.39	.31	.34
					$F = 3.404$, $df = 2$, $p = .039$				
Cumulative remedial hours (ratio of earned to attempted)	$n = 89$	$n = 46$	$n = 43$	$n = 12$	$n = 18$	$n = 16$	$n = 15$	$n = 16$	$n = 12$
Mean proportion	.66	.66	.67	.86	.51	.67	.75	.62	.64
Standard deviation	.35	.37	.33	.23	.43	.33	.33	.35	.32
					$F = 3.383$, $df = 2$, $p = .043$				

Table N3 (continued)

				Tech prep by panel			Non-tech prep by panel		
Variables	**Total**	**Tech prep**	**Non-tech prep**	**'95**	**'96**	**'97**	**'95**	**'96**	**'97**
Credential earned	*n* = 139	*n* = 76	*n* = 63	—	—	—	—	—	—
AA	3 (2.2)	2 (2.6)	1 (1.6)	—	—	—	—	—	—
AAS	13 (9.4)	7 (9.2)	6 (9.5)	—	—	—	—	—	—
AA + AAS	0 (0.0)	0 (0.0)	0 (0.0)	—	—	—	—	—	—
Certificate	0 (0.0)	0 (0.0)	0 (0.0)	—	—	—	—	—	—
AA + certificate	0 (0.0)	0 (0.0)	0 (0.0)	—	—	—	—	—	—
AAS + certificate	0 (0.0)	0 (0.0)	0 (0.0)	—	—	—	—	—	—
TOTAL: Earned degree or certificate	16 (11.6)	9 (11.8)	7 (11.1)	6 (33.3)	2 (6.3)	1 (3.8)	4 (16.7)	2 (9.1)	1 (5.9)
None, still enrolled	23 (16.5)	13 (17.1)	10 (15.9)	4 (22.2)	4 (12.5)	5 (19.2)	2 (8.3)	2 (9.1)	6 (35.3)
None, not enrolled	100 (71.9)	54 (71.1)	46 (73.0)	8 (44.4)	26 (81.3)	20 (76.9)	18 (75.0)	18 (81.8)	10 (58.8)
				χ^2 not performed due to low expected frequencies			χ^2 not performed due to low expected frequencies		

Note. Source: community college transcripts.

Table N4

First-Term Enrollment by Tech Prep Status and Panel for Metro

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
				'95	'96	'97	'95	'96	'97
First-term hours earned at community college (ratio of remedial to total)	$n = 109$	$n = 56$	$n = 53$	$n = 17$	$n = 20$	$n = 19$	$n = 19$	$n = 19$	$n = 15$
Mean proportion	.41	.35	.48	.44	.28	.35	.46	.39	.59
Standard deviation	.41	.40	.42	.40	.45	.35	.40	.44	.42
First-term college-level hours (ratio of earned to attempted)	$n = 111$	$n = 60$	$n = 51$	$n = 15$	$n = 24$	$n = 21$	$n = 20$	$n = 18$	$n = 13$
Mean proportion	.62	.63	.62	.79	.49	.67	.66	.63	.56
Standard deviation	.43	.42	.44	.37	.43	.40	.47	.41	.48
First-term remedial hours (ratio of earned to attempted)	$n = 85$	$n = 43$	$n = 42$	$n = 12$	$n = 15$	$n = 16$	$n = 15$	$n = 15$	$n = 12$
Mean proportion	.62	.56	.69	.80	.36	.58	.75	.56	.77
Standard deviation	.43	.45	.40	.33	.48	.44	.38	.46	.33
				$F = 3.534$, $df = 2,40$, $p = .039$					

Note. Source: community college transcripts.

Table N5

College Enrollment, Cumulative Hours, and Credentials Earned by Tech Prep Status and Panel for Hillsborough (FL)

				Tech prep by panel			Non-tech prep by panel		
Variables	**Total**	**Tech prep**	**Non-tech prep**	**'95**	**'96**	**'97**	**'95**	**'96**	**'97**
Enrolled at community college	$n = 597$	$n = 301$	$n = 296$	$n = 47$	$n = 103$	$n = 151$	$n = 44$	$n = 104$	$n = 148$
Percent enrolled	56.8	52.5	61.1	57.4	45.6	55.6	61.4	57.7	63.5
Percent not enrolled	43.2	47.5	38.9	42.6	54.4	44.4	38.6	42.3	36.5
		$\chi^2 = 4.56$, $df = 1$, $p = .033$							
Total of cumulative hours earned (non-remedial)	$n = 339$	$n = 158$	$n = 181$	$n = 27$	$n = 47$	$n = 84$	$n = 27$	$n = 60$	$n = 94$
Mean	24.45	22.31	26.31	32.26	22.70	18.90	31.78	30.67	21.97
Standard deviation	26.40	26.20	26.50	31.09	27.25	23.25	29.94	30.84	21.57
Cumulative hours earned at community college (ratio of remedial to total)	$n = 314$	$n = 146$	$n = 168$	$n = 24$	$n = 46$	$n = 76$	$n = 25$	$n = 57$	$n = 86$
Mean proportion	.13	.17	.09	.19	.20	.15	.09	.09	.08
Standard deviation	.26	.29	.22	.30	.31	.27	.24	.24	.21
		$t = 2.909$, $df = 312$, $p = .004$							
Cumulative college-level hours (ratio of earned to attempted)	$n = 326$	$n = 152$	$n = 174$	$n = 24$	$n = 45$	$n = 83$	$n = 26$	$n = 57$	$n = 91$
Mean proportion	.78	.78	.77	.72	.86	.76	.79	.75	.77
Standard deviation	.92	.30	.30	.31	.23	.33	.28	.31	.30
Cumulative remedial hours (ratio of earned to attempted)	$n = 114$	$n = 66$	$n = 48$	$n = 14$	$n = 23$	$n = 29$	$n = 10$	$n = 15$	$n = 23$
Mean proportion	.76	.77	.73	.87	.75	.75	.51	.86	.75
Standard deviation	.39	.37	.41	.31	.35	.41	.46	.31	.43

Table N5 (continued)

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
				'95	'96	'97	'95	'96	'97
Credential earned	*n* = 339	*n* = 158	*n* = 181	—	—	—	—	—	—
AA	28 (8.3)	13 (8.2)	15 (8.3)	—	—	—	—	—	—
AAS	0 (0.0)	0 (0.0)	0 (0.0)	—	—	—	—	—	—
AA + AAS	0 (0.0)	0 (0.0)	0 (0.0)	—	—	—	—	—	—
Certificate	2 (.6)	1 (.6)	1 (.6)	—	—	—	—	—	—
AA + certificate	0 (0.0)	0 (0.0)	0 (0.0)	—	—	—	—	—	—
AAS + certificate	0 (0.0)	0 (0.0)	0 (0.0)	—	—	—	—	—	—
TOTAL: Earned degree or certificate	30 (8.9)	14 (8.9)	16 (8.8)	2 (7.4)	5 (10.6)	7 (8.3)	4 (14.8)	6 (10.0)	6 (6.4)
None, still enrolled	72 (21.2)	36 (22.8)	36 (19.9)	6 (22.2)	8 (17.0)	22 (26.2)	4 (14.8)	12 (20.0)	20 (21.3)
None, not enrolled	237 (69.9)	108 (68.4)	129 (71.3)	19 (70.4)	34 (72.3)	55 (65.5)	19 (70.4)	42 (70.0)	68 (72.3)

Note. Source: community college transcripts.

Table N6

First-Term Enrollment by Tech Prep Status and Panel for Hillsborough (FL)

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
				'95	'96	'97	'95	'96	'97
First-term hours earned at community college (ratio of remedial to total)	*n* = 304	*n* = 141	*n* = 163	*n* = 22	*n* = 44	*n* = 75	*n* = 24	*n* = 55	*n* = 84
Mean proportion	.16	.21	.12	.29	.21	.18	.11	.14	.12
Standard deviation	.33	.37	.29	.42	.36	.36	.26	.32	.29
		$t = 2.285$, $df =$ 302, $p = .023$							
First-term college-level hours (ratio of earned to attempted)	*n* = 312	*n* = 143	*n* = 169	*n* = 23	*n* = 43	*n* = 77	*n* = 26	*n* = 55	*n* = 88
Mean proportion	.83	.83	.84	.73	.90	.81	.86	.79	.87
Standard deviation	.33	.34	.32	.41	.25	.36	.29	.34	.32
First-term remedial hours (ratio of earned to attempted)	*n* = 79	*n* = 46	*n* = 33	*n* = 9	*n* = 16	*n* = 21	*n* = 6	*n* = 11	*n* = 16
Mean proportion	.80	.80	.78	.89	.75	.81	.58	.87	.80
Standard deviation	.39	.40	.39	.33	.45	.40	.49	.31	.40

Note. Source: community college transcripts.

Table N7

College Enrollment, Cumulative Hours, and Credentials Earned by Tech Prep Status and Panel for Golden Crescent (TX)

				Tech prep by panel			Non-tech prep by panel		
Variables	**Total**	**Tech prep**	**Non-tech prep**	**'95**	**'96**	**'97**	**'95**	**'96**	**'97**
Enrolled at community college	$n = 585$	$n = 295$	$n = 290$	$n = 49$	$n = 106$	$n = 140$	$n = 47$	$n = 105$	$n = 138$
Percent enrolled	58.3	64.4	52.1	73.5	59.4	.65	61.7	51.4	49.3
Percent not enrolled	41.7	35.6	47.9	26.5	40.6	35.0	38.3	48.6	50.7
		$\chi^2 = 9.16$, $df = 1$, $p = .002$							
Total of cumulative hours earned (non-remedial)	$n = 341$	$n = 190$	$n = 151$	$n = 36$	$n = 63$	$n = 91$	$n = 29$	$n = 54$	$n = 68$
Mean	31.03	32.93	28.63	31.94	36.19	31.07	41.14	25.69	25.63
Standard deviation	26.82	27.41	25.95	27.33	31.46	24.37	27.74	26.86	23.05
							$F = 4.357$, $df = 2, 148$, $p = .015$		
Cumulative hours earned at community college (ratio of remedial to total)	$n = 321$	$n = 182$	$n = 139$	$n = 34$	$n = 60$	$n = 88$	$n = 28$	$n = 46$	$n = 65$
Mean proportion	.10	.09	.10	.07	.12	.09	.06	.11	.11
Standard deviation	.20	.20	.20	.22	.20	.18	.09	.21	.23
Cumulative college-level hours (ratio of earned to attempted)	$n = 336$	$n = 187$	$n = 149$	$n = 36$	$n = 62$	$n = 89$	$n = 29$	$n = 52$	$n = 68$
Mean proportion	.75	.77	.74	.67	.79	.79	.87	.69	.71
Standard deviation	.30	.28	.32	.34	.27	.26	.20	.36	.31
							$F = 3.724$, $df = 2,146$, $p = .026$		
Cumulative remedial hours (ratio of earned to attempted)	$n = 134$	$n = 74$	$n = 60$	$n = 13$	$n = 24$	$n = 37$	$n = 9$	$n = 23$	$n = 28$
Mean proportion	.64	.71	.55	.40	.80	.75	.90	.44	.53
Standard deviation	.40	.39	.39	.45	.28	.39	.22	.34	.42
	$t = 2.319$, $df = 132$, $p = .022$			$F = 5.517$, $df = 2,71$, $p = .006$			$F = 5.019$, $df = 2,57$, $p = .010$		

Table N7 (continued)

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel '95	'96	'97	Non-tech prep by panel '95	'96	'97
Credential earned	$n = 341$	$n = 190$	$n = 151$	—	—	—	—	—	—
AA	15	7	8	—	—	—	—	—	—
	(4.4)	(3.7)	(5.3)						
AAS	12	9	3	—	—	—	—	—	—
	(3.5)	(4.7)	(2.0)						
AA + AAS	1	1	0	—	—	—	—	—	—
	(.3)	(.5)	(0.0)						
Certificate	12	8	4	—	—	—	—	—	—
	(3.5)	(4.2)	(2.6)						
AA + certificate	0	0	0	—	—	—	—	—	—
	(0.0)	(0.0)	(0.0)						
AAS + certificate	0	0	0	—	—	—	—	—	—
	(0.0)	(0.0)	(0.0)						
TOTAL:	40	25	15	5	10	10	6	2	7
Earned degree or certificate	(11.7)	(13.2)	(9.9)	(13.9)	(15.9)	(11.0)	(20.7)	(3.7)	(10.3)
None, still enrolled	70	37	33	4	11	22	2	13	18
	(20.5)	(19.5)	(21.9)	(11.1)	(17.5)	(24.2)	(6.9)	(24.1)	(26.5)
None, not enrolled	231	128	103	27	42	59	21	39	43
	(67.7)	(67.4)	(68.2)	(75.0)	(66.7)	(64.8)	(72.4)	(72.2)	(63.2)
							$\chi^2 = 9.699$, $df = 2$, $p = .046$		

Note. Source: community college transcripts.

Table N8

First-Term Enrollment by Tech Prep Status and Panel for Golden Crescent (TX)

Variables	**Total**	**Tech prep**	**Non-tech prep**	**Tech prep by panel**			**Non-tech prep by panel**		
				'95	**'96**	**'97**	**'95**	**'96**	**'97**
First-term hours earned at community college (ratio of remedial to total)	*n* = 314	*n* = 177	*n* = 137	*n* = 33	*n* = 60	*n* = 84	*n* = 28	*n* = 45	*n* = 64
Mean proportion	.12	.12	.13	.09	.13	.13	.11	.13	.13
Standard deviation	.24	.24	.24	.24	.23	.25	.20	.23	.27
First-term college-level hours (ratio of earned to attempted)	*n* = 336	*n* = 187	*n* = 149	*n* = 36	*n* = 62	*n* = 89	*n* = 29	*n* = 52	*n* = 68
Mean proportion	.81	.82	.81	.75	.86	.82	.90	.76	.80
Standard deviation	.32	.31	.34	.35	.28	.32	.22	.39	.34
First-term remedial hours (ratio of earned to attempted)	*n* = 109	*n* = 57	*n* = 52	*n* = 8	*n* = 20	*n* = 29	*n* = 8	*n* = 21	*n* = 23
Mean proportion	.73	.78	.68	.56	.84	.79	1.0	.63	.62
Standard deviation	.42	.39	.44	.50	.34	.39	.00	.47	.46

Note. Source: community college transcripts.

Table N9

College Enrollment, Cumulative Hours, and Credentials Earned by Tech Prep Status and Panel for Miami Valley (OH)

				Tech prep by panel		**Non-tech prep by panel**	
Variables	**Total**	**Tech prep**	**Non-tech prep**	**'96**	**'97**	**'96**	**'97**
Enrolled at community college	*n* = 347	*n* = 192	*n* = 155	*n* = 82	*n* = 110	*n* = 56	*n* = 99
Percent enrolled	65.7	93.2	31.6	91.5	94.5	30.4	32.3
Percent not enrolled	34.3	6.8	68.4	8.5	5.5	69.6	67.7
		χ^2 = 144.5, *df* = 1, *p* = .000					
Total of cumulative hours earned (non-remedial)	*n* = 228	*n* = 179	*n* = 49	*n* = 75	*n* = 104	*n* = 17	*n* = 32
Mean	50.54	52.79	42.32	57.53	49.37	50.26	38.09
Standard deviation	46.58	47.90	40.84	49.06	46.98	47.02	37.26
Cumulative hours earned at community college (ratio of remedial to total)	*n* = 222	*n* = 174	*n* = 48	*n* = 73	*n* = 101	*n* = 16	*n* = 32
Mean proportion	.07	.05	.16	.06	.04	.13	.17
Standard deviation	.18	.13	.28	.13	.14	.26	.30
		t = 3.77, *df* = 220, *p* = .00					
Cumulative college-level hours (ratio of earned to attempted)	*n* = 225	*n* = 178	*n* = 47	*n* = 74	*n* = 104	*n* = 16	*n* = 31
Mean proportion	.74	.72	.81	.69	.75	.74	.84
Standard deviation	.29	.29	.26	.29	.30	.29	.25
Cumulative remedial hours (ratio of earned to attempted)	*n* = 69	*n* = 49	*n* = 20	*n* = 27	*n* = 22	*n* = 7	*n* = 13
Mean proportion	.78	.71	.95	.73	.68	.92	.97
Standard deviation	.37	.40	.15	.40	.42	.22	.11
		t = 2.61, *df* = 67, *p* = .01					

Table N9 (continued)

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel '96	Tech prep by panel '97	Non-tech prep by panel '96	Non-tech prep by panel '97
Credential earned	$n = 228$	$n = 179$	$n = 49$	—	—	—	—
AA	3 (1.3)	0 (0.0)	3 (6.1)	—	—	—	—
AAS	37 (16.2)	33 (18.4)	4 (8.2)	—	—	—	—
AA + AAS	0 (0.0)	0 (0.0)	0 (0.0)	—	—	—	—
Certificate	0 (0.0)	0 (0.0)	0 (0.0)	—	—	—	—
AA + certificate	0 (0.0)	0 (0.0)	0 (0.0)	—	—	—	—
AAS + certificate	1 (.4)	1 (.6)	0 (0.0)	—	—	—	—
TOTAL: Earned degree or certificate	41 (17.9)	34 (19.0)	7 (14.3)	10 (13.3)	24 (23.1)	5 (29.4)	2 (6.3)
None, still enrolled	53 (23.2)	36 (20.1)	17 (34.7)	15 (20.0)	21 (20.2)	3 (17.6)	14 (43.8)
None, not enrolled	134 (58.8)	109 (60.9)	25 (51.0)	50 (66.7)	59 (56.7)	9 (52.9)	16 (50.0)
						$\chi^2 = 6.368$, $df = 2$, $p = .041$	

Note. Source: community college transcripts.

Table N10

First-Term Enrollment by Tech Prep Status and Panel for Miami Valley (OH)

Variables	**Total**	**Tech prep**	**Non-tech prep**	**Tech prep by panel**		**Non-tech prep by panel**	
				'96	**'97**	**'96**	**'97**
First-term hours earned at community college (ratio of remedial to total)	$n = 213$	$n = 166$	$n = 47$	$n = 68$	$n = 98$	$n = 15$	$n = 32$
Mean proportion	.11	.07	.26	.09	.05	.28	.25
Standard deviation	.28	.24	.37	.28	.20	.37	.37
	$t = 4.307$, $df = 211$, $p = .000$						
First-term college-level hours (ratio of earned to attempted)	$n = 213$	$n = 170$	$n = 43$	$n = 68$	$n = 102$	$n = 15$	$n = 28$
Mean proportion	.89	.89	.90	.88	.90	.83	.94
Standard deviation	.28	.29	.25	.30	.28	.35	.16
First-term remedial hours (ratio of earned to attempted)	$n = 40$	$n = 21$	$n = 19$	$n = 12$	$n = 9$	$n = 7$	$n = 12$
Mean proportion	.77	.60	.97	.58	.61	.95	.97
Standard deviation	.39	.46	.11	.51	.42	.13	.10
	$t = 3.390$, $df = 38$, $p = .002$						

Note. Source: community college transcripts.

Table N11

College Enrollment, Cumulative Hours, and Credentials Earned by Tech Prep Status and Panel for Mt. Hood (OR)

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
				'95	'96	'97	'95	'96	'97
Enrolled at community college	*n* = 489	*n* = 251	*n* = 238	*n* = 57	*n* = 95	*n* = 99	*n* = 60	*n* = 84	*n* = 94
Percent enrolled	56.9	57.4	56.3	54.4	53.7	62.6	60.0	59.5	51.1
Percent not enrolled	43.1	42.6	43.7	45.6	46.3	37.4	40.0	40.5	48.9
Total of cumulative hours earned (non-remedial)	*n* = 278	*n* = 144	*n* = 134	*n* = 31	*n* = 51	*n* = 62	*n* = 36	*n* = 50	*n* = 48
Mean	33.83	31.80	36.02	34.16	34.49	28.40	33.78	45.90	27.42
Standard deviation	37.47	35.26	39.72	37.79	37.40	32.34	39.90	42.73	34.53
Cumulative hours earned at community college (ratio of remedial to total)*	—	—	—	—	—	—	—	—	—
Mean proportion	—	—	—	—	—	—	—	—	—
Standard deviation	—	—	—	—	—	—	—	—	—
Cumulative college-level hours (ratio of earned to attempted)	*n* = 278	*n* = 144	*n* = 134	*n* = 31	*n* = 51	*n* = 62	*n* = 36	*n* = 50	*n* = 48
Mean proportion	.77	.80	.74	.85	.74	.83	.67	.76	.77
Standard deviation	.30	.30	.31	.24	.36	.27	.32	.30	.30
Cumulative remedial hours (ratio of earned to attempted) [a]	—	—	—	—	—	—	—	—	—
Mean proportion	—	—	—	—	—	—	—	—	—
Standard deviation	—	—	—	—	—	—	—	—	—

Note. [a]Hours attempted and earned are not available for developmental courses.

* are for *p*-values.

[a] is for other single-tables notes.

Table N11 (continued)

Variables	**Total**	**Tech prep**	**Non-tech prep**	**Tech prep by panel**			**Non-tech prep by panel**		
				’95	**’96**	**’97**	**’95**	**’96**	**’97**
Credential earned	$n = 278$	$n = 144$	$n = 134$	—	—	—	—	—	—
AA	11 (4.0)	2 (1.4)	9 (6.7)	—	—	—	—	—	—
AAS	14 (5.0)	8 (5.6)	6 (4.5)	—	—	—	—	—	—
AA + AAS	0 (0.0)	0 (0.0)	0 (0.0)	—	—	—	—	—	—
Certificate	1 (.4)	1 (.7)	0 (0.0)	—	—	—	—	—	—
AA + certificate	0 (0.0)	0 (0.0)	0 (0.0)	—	—	—	—	—	—
AAS + certificate	0 (0.0)	0 (0.0)	0 (0.0)	—	—	—	—	—	—
TOTAL: Earned degree or certificate	26 (9.4)	11 (7.6)	15 (11.2)	3 (9.7)	5 (9.8)	3 (4.8)	2 (5.6)	8 (16.0)	5 (10.4)
None, still enrolled	46 (16.5)	26 (18.1)	20 (14.9)	3 (9.7)	6 (11.8)	17 (27.4)	4 (11.1)	8 (16.0)	8 (16.7)
None, not enrolled	206 (74.1)	107 (74.3)	99 (73.9)	25 (80.6)	40 (78.4)	42 (67.7)	30 (83.3)	34 (68.0)	35 (72.9)

Note. Source: community college transcripts.

Table N12
First-Term Enrollment by Tech Prep Status and Panel for Mt. Hood (OR)

				Tech prep by panel			Non-tech prep by panel		
Variables	**Total**	**Tech prep**	**Non-tech prep**	**'95**	**'96**	**'97**	**'95**	**'96**	**'97**
First-term hours earned at community college (ratio of remedial to total)*	—	—	—	—	—	—	—	—	—
Mean proportion	—	—	—	—	—	—	—	—	—
Standard deviation	—	—	—	—	—	—	—	—	—
First-term college-level hours (ratio of earned to attempted)	$n = 276$	$n = 143$	$n = 133$	$n = 30$	$n = 51$	$n = 62$	$n = 35$	$n = 50$	$n = 48$
Mean proportion	.84	.90	.77	.95	.85	.91	.75	.76	.80
Standard deviation	.33	.29	.37	.19	.35	.26	.39	.36	.36
		$t = 3.091$, $df = 274$, $p = .002$							
First-term remedial hours (ratio of earned to attempted)*	—	—	—	—	—	—	—	—	—
Mean proportion	—	—	—	—	—	—	—	—	—
Standard deviation	—	—	—	—	—	—	—	—	—

Note. Source: community college transcripts.

*Hours attempted and earned are not available for developmental courses.

Table N13

College Enrollment, Cumulative Hours, and Credentials Earned by Tech Prep Status and Panel for Guilford County (NC)

Variables	**Total**	**Tech prep**	**Non-tech prep**	**Tech prep by panel**			**Non-tech prep by panel**		
				’96	**’97**	**’98**	**’96**	**’97**	**’98**
Enrolled at community college	*n* = 723	*n* = 412	*n* = 311	*n* = 99	*n* = 135	*n* = 178	*n* = 99	*n* = 127	*n* = 85
Percent enrolled	27.9	30.3	24.8	34.3	32.6	26.4	26.3	26.8	20.0
Percent not enrolled	72.1	69.7	75.2	65.7	67.4	73.6	73.7	73.2	80.0
Total of cumulative hours earned (non-remedial)	*n* = 202	*n* = 125	*n* = 77	*n* = 34	*n* = 44	*n* = 47	*n* = 26	*n* = 34	*n* = 17
Mean	25.00	26.81	22.06	35.20	23.94	23.43	20.15	21.62	25.88
Standard deviation	24.06	25.98	20.39	32.17	24.70	20.86	20.61	21.25	18.91
Cumulative hours earned at community college (ratio of remedial to total)	*n* = 174	*n* = 106	*n* = 68	*n* = 31	*n* = 35	*n* = 40	*n* = 22	*n* = 30	*n* = 16
Mean proportion	.12	.10	.16	.15	.11	.06	.11	.15	.26
Standard deviation	.23	.21	.26	.24	.25	.13	.23	.25	.32
Cumulative college-level hours (ratio of earned to attempted)	*n* = 198	*n* = 123	*n* = 75	*n* = 33	*n* = 43	*n* = 47	*n* = 26	*n* = 33	*n* = 16
Mean proportion	.62	.63	.60	.67	.55	.68	.56	.56	.77
Standard deviation	.35	.36	.34	.31	.39	.37	.37	.33	.27
Cumulative remedial hours (ratio of earned to attempted)	*n* = 85	*n* = 46	*n* = 39	*n* = 16	*n* = 16	*n* = 14	*n* = 10	*n* = 16	*n* = 13
Mean proportion	.69	.72	.65	.82	.63	.71	.68	.63	.66
Standard deviation	.41	.41	.41	.33	.43	.47	.41	.41	.41

Table N13 (continued)

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
				'96	'97	'98	'96	'97	'98
Credential earned	$n = 202$	$n = 125$	$n = 77$	—	—	—	—	—	—
AA	5 (2.5)	3 (2.4)	2 (2.6)	—	—	—	—	—	—
AAS	8 (4.0)	6 (4.8)	2 (2.6)	—	—	—	—	—	—
AA + AAS	0 (0.0)	0 (0.0)	0 (0.0)	—	—	—	—	—	—
Certificate	3 (1.5)	2 (1.6)	1 (1.3)	—	—	—	—	—	—
AA + certificate	0 (0.0)	0 (0.0)	0 (0.0)	—	—	—	—	—	—
AAS + certificate	1 (.5)	1 (.8)	0 (0.0)	—	—	—	—	—	—
TOTAL: Earned degree or certificate	17 (8.5)	12 (9.6)	5 (6.5)	6 (17.6)	3 (6.8)	3 (6.4)	1 (3.8)	4 (11.8)	0 (0.0)
None, still enrolled	69 (34.2)	43 (34.4)	26 (33.8)	6 (17.6)	13 (29.5)	24 (51.1)	2 (7.7)	12 (35.3)	12 (70.6)
None, not enrolled	116 (57.4)	70 (56.0)	46 (59.7)	22 (64.7)	28 (63.6)	20 (42.6)	23 (88.5)	18 (52.9)	5 (29.4)
				χ^2 not performed due to low expected frequencies			χ^2 not performed due to low expected frequencies		

Note. Source: community college transcripts.

Table N14

First-Term Enrollment by Tech Prep Status and Panel for Guilford County (NC)

				Tech prep by panel			Non-tech prep by panel		
Variables	**Total**	**Tech prep**	**Non-tech prep**	**'96**	**'97**	**'98**	**'96**	**'97**	**'98**
First-term hours earned at community college (ratio of remedial to total)	$n = 165$	$n = 101$	$n = 64$	$n = 31$	$n = 31$	$n = 39$	$n = 22$	$n = 27$	$n = 15$
Mean proportion	.20	.17	.25	.27	.17	.08	.19	.23	.39
Standard deviation	.32	.29	.36	.36	.31	.17	.36	.34	.38
				$F = 4.019$, $df = 2,98$, $p = .021$					
First-term college-level hours (ratio of earned to attempted)	$n = 190$	$n = 119$	$n = 71$	$n = 31$	$n = 41$	$n = 47$	$n = 25$	$n = 32$	$n = 14$
Mean proportion	.67	.68	.64	.72	.59	.73	.62	.58	.81
Standard deviation	.41	.41	.41	.36	.45	.38	.43	.43	.29
First-term remedial hours (ratio of earned to attempted)	$n = 76$	$n = 40$	$n = 36$	$n = 14$	$n = 14$	$n = 12$	$n = 9$	$n = 14$	$n = 13$
Mean proportion	.74	.80	.68	1.0	.71	.67	.61	.75	.65
Standard deviation	.43	.41	.45	.00	.47	.49	.49	.43	.47

Note. Source: community college transcripts.

Table N15

College Enrollment, Cumulative Hours, and Credentials Earned by Tech Prep Status and Panel for San Mateo (CA)

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel '95	Tech prep by panel '96	Tech prep by panel '97	Non-tech prep by panel '95	Non-tech prep by panel '96	Non-tech prep by panel '97
Enrolled at community college	*n* = 622	*n* = 314	*n* = 308	*n* = 76	*n* = 119	*n* = 119	*n* = 75	*n* = 116	*n* = 117
Percent enrolled	70.9	71.0	70.8	69.7	70.6	72.3	76.0	71.6	66.7
Percent not enrolled	29.1	29.0	29.2	30.3	29.4	27.7	24.0	28.4	33.3
Total of cumulative hours earned (non-remedial)	*n* = 441	*n* = 223	*n* = 218	*n* = 53	*n* = 84	*n* = 86	*n* = 57	*n* = 83	*n* = 78
Mean	27.46	30.97	23.87	45.55	26.45	26.40	27.88	24.81	19.94
Standard deviation	29.55	30.55	28.10	32.50	29.51	27.70	31.24	29.07	24.23
		t = 2.539, *df* = 439, *p* = .011		*F* = 8.449, *df* = 2, 220, *p* = .000					
Cumulative hours earned at community college (ratio of remedial to total)	*n* = 405	*n* = 206	*n* = 199	*n* = 51	*n* = 74	*n* = 81	*n* = 56	*n* = 76	*n* = 67
Mean proportion	.08	.10	.07	.06	.10	.12	.07	.06	.08
Standard deviation	.18	.20	.15	.12	.18	.26	.18	.10	.16
Cumulative college-level hours (ratio of earned to attempted)	*n* = 437	*n* = 221	*n* = 216	*n* = 53	*n* = 84	*n* = 84	*n* = 57	*n* = 83	*n* = 76
Mean proportion	.68	.65	.71	.77	.57	.65	.71	.73	.69
Standard deviation	.32	.32	.32	.25	.33	.32	.30	.31	.35
		t = 2.022, *df* = 435, *p* = .044		*F* = 6.377, *df* = 2,218, *p* = .002					
Cumulative remedial hours (ratio of earned to attempted)	*n* = 181	*n* = 97	*n* = 84	*n* = 25	*n* = 39	*n* = 33	*n* = 23	*n* = 32	*n* = 29
Mean proportion	.74	.74	.74	.78	.72	.74	.66	.80	.73
Standard deviation	.37	.38	.36	.38	.36	.40	.34	.36	.38

Table N15 (continued)

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
				'95	'96	'97	'95	'96	'97
Credential earned	$n = 441$	$n = 223$	$n = 218$	—	—	—	—	—	—
AA	18 (4.1)	11 (4.9)	7 (3.2)	—	—	—	—	—	—
AAS	0 (0.0)	0 (0.0)	0 (0.0)	—	—	—	—	—	—
AA + AAS	0 (0.0)	0 (0.0)	0 (0.0)	—	—	—	—	—	—
Certificate	6 (1.4)	5 (2.2)	1 (.5)	—	—	—	—	—	—
AA + certificate	0 (0.0)	0 (0.0)	0 (0.0)	—	—	—	—	—	—
AAS + certificate	0 (0.0)	0 (0.0)	0 (0.0)	—	—	—	—	—	—
TOTAL: Earned degree or certificate	24 (5.5)	16 (7.2)	8 (3.7)	6 (11.3)	4 (4.8)	6 (7.0)	6 (10.5)	2 (2.4)	0 (0.0)
None, still enrolled	10 (24.7)	61 (27.4)	48 (22.0)	9 (17.0)	26 (31.0)	26 (30.2)	8 (14.0)	18 (21.7)	22 (28.2)
None, not enrolled	308 (69.8)	146 (65.5)	162 (74.3)	38 (71.7)	54 (64.3)	54 (62.8)	43 (75.4)	63 (75.9)	56 (71.8)
							χ^2 not performed due to low expected frequencies		

Note. Source: community college transcripts.

Table N16

First-Term Enrollment by Tech Prep Status and Panel for San Mateo (CA)

				Tech prep by panel			Non-tech prep by panel		
Variables	**Total**	**Tech prep**	**Non-tech prep**	**'95**	**'96**	**'97**	**'95**	**'96**	**'97**
First-term hours earned at community college (ratio of remedial to total)	*n* = 374	*n* = 191	*n* = 183	*n* = 48	*n* = 68	*n* = 75	*n* = 48	*n* = 75	*n* = 60
Mean proportion	.13	.14	.12	.09	.15	.16	.09	.12	.13
Standard deviation	.26	.28	.25	.18	.30	.31	.21	.26	.28
First-term college-level hours (ratio of earned to attempted)	*n* = 423	*n* = 215	*n* = 208	*n* = 52	*n* = 82	*n* = 81	*n* = 56	*n* = 80	*n* = 72
Mean proportion	.76	.75	.77	.83	.68	.77	.76	.82	.71
Standard deviation	.39	.39	.38	.32	.43	.38	.38	.35	.42
First-term remedial hours (ratio of earned to attempted)	*n* = 125	*n* = 69	*n* = 56	*n* = 16	*n* = 26	*n* = 27	*n* = 12	*n* = 21	*n* = 23
Mean proportion	.68	.65	.70	.66	.57	.73	.69	.75	.66
Standard deviation	.44	.45	.43	.47	.46	.44	.41	.42	.45

Note. Source: community college transcripts.

Appendix O

Post-High-School Work Experience

Table O1

Post-High-School Work Experience by Tech Prep Status and Panel for East-Central Illinois (IL)

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
				'95	'96	'97	'95	'96	'97
Employment status	$n = 335$	$n = 178$	$n = 157$	$n = 4$	$n = 80$	$n = 94$	$n = 0$	$n = 65$	$n = 92$
Unemployed, not seeking	5.4	5.6	5.1	0.0	7.5	4.3	0.0	4.6	5.4
Unemployed, seeking	7.2	7.3	7.0	0.0	5.0	9.6	0.0	4.6	8.7
Part-time	33.1	29.2	37.6	50.0	27.5	29.8	0.0	35.4	39.1
Full-time	52.2	55.6	48.4	50.0	57.5	54.3	0.0	50.8	46.7
Military	2.1	2.2	1.9	0.0	2.5	2.1	0.0	4.6	0.0
Number of jobs after high school	$n = 341$	$n = 184$	$n = 157$	$n = 4$	$n = 81$	$n = 99$	$n = 0$	$n = 65$	$n = 92$
No job	1.8	3.3	0.0	0.0	1.2	5.1	0.0	0.0	0.0
1 job	55.4	51.1	60.5	75.0	45.7	54.5	0.0	56.9	63.0
2 jobs	25.2	27.7	22.3	0.0	32.1	25.3	0.0	18.5	25.0
3 jobs	10.3	10.9	9.6	25.0	11.1	10.1	0.0	13.8	6.5
4 jobs	3.2	3.8	2.5	0.0	6.2	2.0	0.0	3.1	2.2
5 or more jobs	4.1	3.3	5.1	0.0	3.7	3.0	0.0	7.7	3.3
Employment time—current job	$n = 290$	$n = 155$	$n = 135$	$n = 4$	$n = 71$	$n = 80$	$n = 0$	$n = 57$	$n = 78$
< 6 months	30.3	25.2	36.3	0.0	32.4	20.0	0.0	26.3	43.6
7–12 months	31.4	35.5	26.7	25.0	23.9	46.3	0.0	28.1	25.6
13–24 months	18.3	21.3	14.8	0.0	19.7	23.8	0.0	19.3	11.5
25–36 months	6.6	4.5	8.9	50.0	5.6	1.3	0.0	14.0	5.1
> 36 months	13.4	13.6	13.3	25.0	18.3	8.8	0.0	12.3	14.1
				$\chi^2 = 12.53$, $df = 4$, $p = .014$ (panel '95 omitted)					
Job type	$n = 287$	$n = 155$	$n = 132$	$n = 4$	$n = 71$	$n = 80$	$n = 0$	$n = 54$	$n = 78$
Unskilled	53.7	45.2	63.6	0.0	43.7	48.8	0.0	59.3	66.7
Semi-skilled	30.3	38.7	20.5	25.0	35.2	42.5	0.0	27.8	15.4
Skilled or technical	12.2	12.3	12.1	50.0	18.3	5.0	0.0	9.3	14.1
Professional	3.8	3.9	3.8	25.0	2.8	3.8	0.0	3.7	3.9
		$\chi^2 = 12.37$, $df = 3$, $p = .006$							

Table O1 (continued)

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
				'95	'96	'97	'95	'96	'97
Job type for those with 1–2 jobs since HS	n = 236	n = 127	n = 109	n = 3	n = 57	n = 67	n = 0	n = 40	n = 69
Unskilled	53.8	45.7	63.3	0.0	43.9	49.3	0.0	55.0	68.1
Semi-skilled	30.1	40.2	18.4	33.3	36.8	43.3	0.0	27.5	13.0
Skilled or technical	12.7	11.0	14.7	66.7	15.8	4.5	0.0	12.5	15.9
Professional	3.4	3.2	3.7	0.0	3.5	3.0	0.0	5.0	2.9
		$\chi^2 = 13.30$, df = 2, p = .001 (collapsing skilled/technical and professional)							
Salary rate (per hour)	n = 239	n = 153	n = 86	n = 4	n = 70	n = 79	n = 0	n = 55	n = 78
$0	0.5	0.0	1.5	0.0	0.0	0.0	0.0	0.0	2.6
< $5.25	9.9	9.2	11.3	0.0	7.1	11.4	0.0	10.9	11.5
$5.26–$6.00	20.9	18.3	25.6	0.0	11.4	25.3	0.0	20.0	29.5
$6.01–$7.00	21.2	20.9	21.8	50.0	22.9	17.7	0.0	23.6	20.5
$7.01–$8.00	13.5	13.1	14.3	0.0	11.4	15.2	0.0	16.4	12.8
$8.01–$9.00	12.0	13.7	9.0	50.0	18.6	7.6	0.0	3.6	12.8
$9.01–$10.00	7.0	7.2	6.8	0.0	4.3	10.1	0.0	12.7	2.6
$10.01–$11.00	11.4	14.4	6.0	0.0	21.4	8.9	0.0	7.3	5.1
$11.01–$12.00	1.7	1.3	2.3	0.0	1.4	1.3	0.0	3.6	1.3
$12.01–$13.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
> $13.00	1.8	2.0	1.5	0.0	1.4	2.5	0.0	1.8	1.3
		$\chi^2 = 4.38$, df = 1, p = .036 (median test)							
Job expectation	n = 337	n = 183	n = 154	n = 4	n = 81	n = 98	n = 0	n = 62	n = 92
Unskilled	3.3	3.3	3.3	0.0	2.5	4.1	0.0	3.2	3.3
Semi-skilled	10.1	12.0	7.8	0.0	8.6	15.3	0.0	6.5	8.7
Skilled or technical	26.7	27.3	26.0	50.0	28.4	25.5	0.0	32.3	21.7
Professional	59.9	57.4	63.0	50.0	60.5	55.1	0.0	58.1	66.3
Job satisfaction	n = 290	n = 155	n = 135	n = 4	n = 71	n = 80	n = 0	n = 57	n = 78
Mean	2.7	2.8	2.7	2.5	2.8	2.8	0.0	2.5	2.6
Confidence in career goal	n = 338	n = 182	n = 156	n = 4	n = 81	n = 98	n = 0	n = 64	n = 92
Mean	3.9	3.9	3.9	4.7	3.8	3.9	0.0	3.9	4.0

Note. Source: 1998 Education-To-Careers Follow-Up Survey.

Table O2

Job Type by Tech Prep Status and Employment Status for East-Central Illinois (IL)

		All		**Full-time**		**Part-time**	
Job type	**Total** $n = 283$	**Full-time** $n = 177$	**Part-time** $n = 106$	**Tech prep** $n = 101$	**Non-tech prep** $n = 76$	**Tech prep** $n = 51$	**Non-tech prep** $n = 55$
Unskilled	54.1	46.9	66.0	39.6	56.6	58.8	72.7
Semi-skilled	30.4	35.6	21.7	44.6	23.7	27.5	16.6
Skilled or technical	11.7	14.1	7.6	11.9	17.1	9.8	5.5
Professional	3.9	3.4	4.7	4.0	2.6	3.9	5.5
		$\chi^2 = 11.47$, $df = 3$, $p = .009$		$\chi^2 = 9.04$, $df = 3$, $p = .029$			

Note. Source: 1998 Education-To-Careers Follow-Up Survey.

Table O3

Post-High-School Work Experience by Tech Prep Status and Panel for Metro

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel '95	Tech prep by panel '96	Tech prep by panel '97	Non-tech prep by panel '95	Non-tech prep by panel '96	Non-tech prep by panel '97
Employment status	*n* = 256	*n* = 124	*n* = 132	*n* = 28	*n* = 35	*n* = 61	*n* = 38	*n* = 38	*n* = 56
Unemployed, not seeking	4.7	3.2	6.1	3.6	2.9	3.3	2.6	7.9	7.1
Unemployed, seeking	23.8	29.0	18.9	17.9	22.9	37.7	7.9	23.7	23.2
Part-time	38.3	37.1	39.4	32.1	40.0	37.7	28.9	39.5	46.4
Full-time	32.0	29.8	34.1	46.4	34.3	19.7	57.9	26.3	23.2
Military	1.2	0.8	1.5	0.0	0.0	1.6	2.6	2.6	0.0
							$\chi^2 = 15.76$, $df = 4$, $p = .003$ (collapsed *military* to *full-time* and *unemployed not seeking* and *unemployed seeking* together)		
Number of jobs after high school	*n* = 276	*n* = 134	*n* = 142	*n* = 28	*n* = 36	*n* = 70	*n* = 40	*n* = 42	*n* = 60
No job	7.6	6.0	9.2	0.0	0.0	11.4	5.0	11.9	10.0
1 job	26.4	26.9	26.1	21.4	27.8	28.6	22.5	16.7	35.0
2 jobs	29.7	35.1	24.6	32.1	36.1	35.7	25.0	21.4	26.7
3 jobs	21.4	19.4	23.2	28.6	30.6	10.0	20.0	33.3	18.3
4 jobs	8.0	6.7	9.2	14.3	5.6	4.3	15.0	4.8	8.3
5 or more jobs	6.9	6.0	7.7	3.6	0.0	10.0	12.5	11.9	1.7
Employment time—current job	*n* = 187	*n* = 88	*n* = 99	*n* = 21	*n* = 26	*n* = 41	*n* = 34	*n* = 27	*n* = 38
< 6 months	29.9	28.4	31.3	14.3	19.2	41.5	23.5	22.2	44.7
7–12 months	30.5	30.7	30.3	28.6	34.6	29.3	32.4	29.6	29.0
13–24 months	18.7	19.3	18.2	28.6	23.1	12.2	11.8	29.6	15.8
25–36 months	8.6	6.8	10.1	9.5	7.7	4.9	20.6	3.7	5.3
> 36 months	12.3	14.8	10.1	19.1	15.4	12.2	11.8	14.8	5.3
Job type	*n* = 184	*n* = 86	*n* = 98	*n* = 21	*n* = 26	*n* = 39	*n* = 33	*n* = 27	*n* = 38
Unskilled	54.3	54.7	54.1	47.6	50.0	61.5	36.4	59.3	65.8
Semi-skilled	25.0	27.9	22.5	33.3	23.1	28.2	33.3	14.8	18.4
Skilled or technical	13.6	11.6	15.3	9.5	19.2	7.7	21.2	18.5	7.9
Professional	7.1	5.8	8.2	9.5	7.7	2.6	9.1	7.4	7.9

Table O3 (continued)

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
				'95	'96	'97	'95	'96	'97
Job type for those with 1–2 jobs since HS	$n = 108$	$n = 59$	$n = 49$	$n = 12$	$n = 19$	$n = 28$	$n = 15$	$n = 10$	$n = 24$
Unskilled	63.0	67.8	57.1	50.0	63.2	78.6	33.3	70.0	66.7
Semi-skilled	20.4	22.0	18.4	25.0	26.3	17.9	26.7	10.0	16.7
Skilled or technical	13.0	6.8	20.4	16.7	5.3	3.6	40.0	20.0	8.3
Professional	3.7	3.4	4.1	8.3	5.3	0.0	0.0	0.0	8.3
Salary rate (per hour)	$n = 180$	$n = 83$	$n = 97$	$n = 20$	$n = 25$	$n = 38$	$n = 34$	$n = 25$	$n = 38$
$0	1.7	2.4	1.0	0.0	4.0	2.6	0.0	0.0	2.6
< $5.25	5.0	3.6	6.2	0.0	0.0	7.9	8.8	0.0	7.9
$5.26–$6.00	17.2	16.9	17.5	10.0	20.0	18.4	11.8	24.0	18.4
$6.01–$7.00	23.3	25.3	21.7	15.0	20.0	34.2	5.9	28.0	31.6
$7.01–$8.00	14.4	15.7	13.4	30.0	8.0	13.2	14.7	8.0	15.8
$8.01–$9.00	11.7	9.6	13.4	5.0	16.0	7.9	14.7	24.0	5.3
$9.01–$10.00	8.9	9.6	8.3	15.0	12.0	5.3	5.9	8.0	10.5
$10.01–$11.00	2.8	2.4	3.1	5.0	0.0	2.6	2.9	4.0	2.6
$11.01–$12.00	3.3	3.6	3.1	0.0	4.0	5.3	2.9	4.0	2.6
$12.01–$13.00	3.9	4.8	3.1	15.0	4.0	0.0	8.8	0.0	0.0
> $13.00	7.8	6.0	9.3	5.0	12.0	2.6	23.5	0.0	2.6
				$\chi^2 = 7.58$, $df = 2$, $p = .023$ (median test)			$\chi^2 = 9.72$, $df = 2$, $p = .008$ (median test)		
Job expectation	$n = 275$	$n = 134$	$n = 141$	$n = 28$	$n = 36$	$n = 70$	$n = 40$	$n = 42$	$n = 59$
Unskilled	2.9	3.7	2.1	0.0	0.0	7.1	2.5	4.8	0.0
Semi-skilled	8.7	6.7	10.6	7.1	2.8	8.6	7.5	11.9	11.9
Skilled or technical	20.0	17.9	22.0	21.4	30.6	10.0	25.0	16.7	23.7
Professional	68.4	71.6	65.3	71.4	66.7	74.3	65.0	66.7	64.4
Job satisfaction	$n = 184$	$n = 85$	$n = 99$	$n = 21$	$n = 25$	$n = 39$	$n = 34$	$n = 27$	$n = 38$
Mean	3.0	3.0	3.0	2.5	3.2	3.1	2.8	3.6	2.9
							$F = 4.43$, $df = 2$, $p = .015$ (post hoc shows 1995 vs. 1996)		
Confidence in career goal	$n = 275$	$n = 134$	$n = 141$	$n = 28$	$n = 36$	$n = 70$	$n = 40$	$n = 41$	$n = 60$
Mean	4.3	4.3	4.3	4.3	4.3	4.4	4.4	4.2	4.4

Note. Source: 1998 Education-To-Careers Follow-Up Survey.

Table O4

Job Type by Tech Prep Status and Employment Status for Metro

		All		Full-time		Part-time	
	Total	**Full-time**	**Part-time**	**Tech prep**	**Non-tech prep**	**Tech prep**	**Non-tech prep**
Job type	$n = 176$	$n = 82$	$n = 94$	$n = 37$	$n = 45$	$n = 43$	$n = 51$
Unskilled	55.1	41.5	67.0	37.8	44.4	69.8	64.7
Semi-skilled	23.3	24.4	22.3	29.7	20.0	23.3	21.6
Skilled or technical	14.2	23.2	6.4	18.9	26.7	7.0	5.9
Professional	7.4	11.0	4.3	13.5	8.9	0.0	7.8
		$\chi^2 = 16.64$, $df = 3$, $p < .001$					

Note. Source: 1998 Education-To-Careers Follow-Up Survey.

Table O5

Post-High-School Work Experience by Tech Prep Status and Panel for Hillsborough (FL)

				Tech prep by panel			Non-tech prep by panel		
Variables	**Total**	**Tech prep**	**Non-tech prep**	**'95**	**'96**	**'97**	**'95**	**'96**	**'97**
Employment status	*n* = 263	*n* = 126	*n* = 137	*n* = 16	*n* = 36	*n* = 74	*n* = 16	*n* = 48	*n* = 73
Unemployed, not seeking	4.6	1.6	7.3	6.3	0.0	1.4	12.5	10.4	4.1
Unemployed, seeking	6.1	7.1	5.1	12.5	8.3	5.4	6.3	2.1	6.8
Part-time	38.8	34.9	42.3	25.0	30.6	39.2	25.0	43.8	45.2
Full-time	49.8	55.6	44.5	50.0	61.1	54.1	56.3	41.7	43.8
Military	0.8	0.8	0.7	6.3	0.0	0.0	0.0	2.1	0.0
Number of jobs after high school	*n* = 269	*n* = 129	*n* = 140	*n* = 16	*n* = 38	*n* = 75	*n* = 16	*n* = 49	*n* = 75
No job	1.9	2.3	1.4	0.0	5.3	1.3	0.0	2.0	1.3
1 job	28.3	29.5	27.1	25.0	18.4	36.0	6.3	24.5	33.3
2 jobs	36.8	38.8	35.0	18.8	42.1	41.3	31.3	34.7	36.0
3 jobs	19.7	18.6	20.7	25.0	21.1	16.0	37.5	20.4	17.3
4 jobs	8.9	5.4	12.1	6.3	5.3	5.3	12.5	16.3	9.3
5 or more jobs	4.5	5.4	3.6	25.0	7.9	0.0	12.5	2.0	2.7
				$\chi^2 = 13.62$, $df = 6$, $p = .034$					
Employment time—current job	*n* = 231	*n* = 112	*n* = 119	*n* = 10	*n* = 33	*n* = 69	*n* = 14	*n* = 42	*n* = 63
< 6 months	28.1	24.1	31.9	40.0	18.2	24.6	28.6	31.0	33.3
7–12 months	23.8	29.5	18.5	10.0	33.3	30.4	7.1	14.3	23.8
13–24 months	26.0	24.1	27.7	30.0	9.1	30.4	35.7	23.8	28.6
25–36 months	9.5	8.9	10.1	10.0	15.2	5.8	14.3	19.1	3.2
> 36 months	12.6	13.4	11.8	10.0	24.2	8.7	14.3	38.5	11.1
				$\chi^2 = 10.94$, $df = 4$, $p = .027$ (panel '95 omitted)					
Job type	*n* = 230	*n* = 111	*n* = 119	*n* = 10	*n* = 33	*n* = 68	*n* = 14	*n* = 42	*n* = 63
Unskilled	47.4	46.0	48.7	60.0	42.4	45.6	42.9	47.6	50.8
Semi-skilled	35.2	32.4	37.8	20.0	30.3	35.3	42.9	42.9	33.3
Skilled or technical	10.0	13.5	6.7	0.0	21.2	11.8	0.0	4.8	9.5
Professional	7.4	8.1	6.7	20.0	6.1	7.4	14.3	4.8	6.4

Table O5 (continued)

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel '95	Tech prep by panel '96	Tech prep by panel '97	Non-tech prep by panel '95	Non-tech prep by panel '96	Non-tech prep by panel '97
Job type for those with 1–2 jobs since HS	*n* = 151	*n* = 80	*n* = 71	*n* = 5	*n* = 21	*n* = 54	*n* = 4	*n* = 26	*n* = 41
Unskilled	47.7	43.8	52.1	60.0	38.1	44.4	50.0	57.7	48.8
Semi-skilled	35.1	35.0	35.2	20.0	28.6	38.9	50.0	38.5	31.7
Skilled or technical	10.6	12.5	8.5	0.0	28.6	7.4	0.0	3.8	12.2
Professional	6.6	8.8	4.2	20.0	4.8	9.3	0.0	0.0	7.3
Salary rate (per hour)	*n* = 225	*n* = 110	*n* = 115	*n* = 10	*n* = 32	*n* = 68	*n* = 14	*n* = 41	*n* = 60
$0	0.9	1.8	0.0	10.0	0.0	1.5	0.0	0.0	0.0
< $5.25	4.4	2.7	6.1	0.0	3.1	2.9	7.1	4.9	6.7
$5.26–$6.00	15.6	13.6	17.4	20.0	12.5	13.2	7.1	12.2	23.3
$6.01–$7.00	20.4	16.4	24.3	0.0	18.8	17.6	7.1	26.8	26.7
$7.01–$8.00	14.2	17.3	11.3	10.0	9.4	22.1	7.1	12.2	11.7
$8.01–$9.00	16.9	18.2	15.7	20.0	21.9	16.2	21.4	14.6	15.0
$9.01–$10.00	10.2	11.8	8.7	20.0	9.4	11.8	7.1	12.2	6.7
$10.01–$11.00	7.1	9.1	5.2	0.0	15.6	7.4	7.1	7.3	3.3
$11.01–$12.00	4.0	3.6	4.3	10.0	0.0	4.4	14.3	2.4	3.3
$12.01–$13.00	1.8	0.9	2.6	0.0	3.1	0.0	7.1	4.9	0.0
> $13.00	4.4	4.5	4.3	10.0	6.3	2.9	14.3	2.4	3.3
							$\chi^2 = 6.82$, $df = 2$, $p = .033$ (median test)		
Job expectation	*n* = 265	*n* = 125	*n* = 140	*n* = 16	*n* = 35	*n* = 74	*n* = 16	*n* = 49	*n* = 75
Unskilled	3.0	5.6	0.7	12.5	0.0	6.8	0.0	0.0	1.3
Semi-skilled	6.0	8.0	4.3	6.3	8.6	8.1	0.0	4.1	5.3
Skilled or technical	17.0	16.8	17.1	18.8	20.0	14.9	0.0	18.4	20.0
Professional	74.0	69.6	77.9	62.5	71.4	70.3	100.0	77.6	73.3
		$\chi^2 = 6.00$, $df = 2$, $p = .05$ (collapsing unskilled and semi-skilled)							
Job satisfaction	*n* = 229	*n* = 110	*n* = 119	*n* = 10	*n* = 33	*n* = 67	*n* = 14	*n* = 42	*n* = 63
Mean	2.6	2.5	2.7	2.1	2.5	2.5	2.4	3.0	2.6
Confidence in career goal	*n* = 265	*n* = 125	*n* = 140	*n* = 16	*n* = 36	*n* = 73	*n* = 16	*n* = 49	*n* = 75
Mean	4.3	4.2	4.3	4.1	4.1	4.3	4.6	4.3	4.2

Note. Source: 1998 Education-To-Careers Follow-Up Survey.

Table O6

Job Type by Tech Prep Status and Employment Status for Hillsborough (FL)

		All		Full-time		Part-time	
Job type	**Total** $n = 226$	**Full-time** $n = 127$	**Part-time** $n = 99$	**Tech prep** $n = 68$	**Non-tech prep** $n = 59$	**Tech prep** $n = 43$	**Non-tech prep** $n = 56$
Unskilled	65.0	38.6	58.6	36.8	40.7	60.5	57.1
Semi-skilled	46.9	37.8	31.3	35.3	40.7	27.9	33.9
Skilled or technical	20.8	12.6	7.1	16.2	8.5	9.3	5.4
Professional	9.3	11.0	3.0	11.8	10.2	2.3	3.6
		$\chi^2 = 11.77$, $df = 3$, $p = .008$ (collapsing *skilled/technical* and *professional*)					

Note. Source: 1998 Education-To-Careers Follow-Up Survey.

Table O7

Post-High-School Work Experience by Tech Prep Status and Panel for Golden Crescent (TX)

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
				'95	'96	'97	'95	'96	'97
Employment status	*n* = 216	*n* = 126	*n* = 90	*n* = 17	*n* = 41	*n* = 68	*n* = 12	*n* = 28	*n* = 50
Unemployed, not seeking	8.3	8.7	7.8	5.9	4.9	11.8	8.3	7.1	8.0
Unemployed, seeking	8.8	8.7	8.9	23.5	4.9	7.4	8.3	17.9	4.0
Part-time	40.7	40.5	41.1	29.4	39.0	44.1	25.0	39.3	46.0
Full-time	39.8	41.3	37.8	41.2	48.8	36.8	58.3	32.1	36.0
Military	2.3	0.8	4.4	0.0	2.4	0.0	0.0	3.6	6.0
Number of jobs after high school	*n* = 222	*n* = 129	*n* = 93	*n* = 17	*n* = 42	*n* = 70	*n* = 12	*n* = 30	*n* = 51
No job	2.3	2.3	2.2	0.0	2.4	2.9	0.0	3.3	2.0
1 job	28.8	29.5	28.0	17.6	23.8	35.7	25.0	20.0	33.3
2 jobs	29.7	26.4	34.4	23.5	26.2	27.1	33.3	40.0	31.4
3 jobs	23.0	24.8	20.4	35.3	26.2	21.4	25.0	20.0	19.6
4 jobs	10.4	10.1	10.8	17.6	16.7	4.3	8.3	13.3	9.8
5 or more jobs	5.9	7.0	4.3	5.9	4.8	8.6	8.3	3.3	3.9
Employment time—current job	*n* = 170	*n* = 98	*n* = 72	*n* = 12	*n* = 35	*n* = 51	*n* = 12	*n* = 20	*n* = 40
< 6 months	25.9	24.5	27.8	8.3	20.0	31.4	25.0	25.0	30.0
7–12 months	32.4	31.6	33.3	50.0	34.3	25.5	41.7	30.0	32.5
13–24 months	24.1	24.5	23.6	33.3	20.0	25.5	25.0	25.0	22.5
25–36 months	8.8	11.2	5.6	0.0	20.0	7.8	0.0	10.0	5.0
> 36 months	8.8	8.2	9.7	8.3	5.7	9.8	8.3	10.0	10.0
Job type	*n* = 169	*n* = 98	*n* = 71	*n* = 12	*n* = 35	*n* = 51	*n* = 11	*n* = 20	*n* = 40
Unskilled	56.8	56.1	57.8	50.0	43.3	60.8	54.6	55.0	60.0
Semi-skilled	30.8	33.7	26.8	41.7	43.3	29.1	27.3	25.0	27.5
Skilled or technical	7.7	7.1	8.5	8.3	6.7	5.9	9.1	5.0	10.0
Professional	4.7	3.1	7.0	0.0	6.7	3.9	9.1	15.0	2.5

Table O7 (continued)

			Non-	Tech prep			Non-tech prep		
Variables	**Total**	**Tech prep**	**tech prep**	**'95**	**by panel '96**	**'97**	**'95**	**by panel '96**	**'97**
Job type for those with 1–2 jobs since HS	*n* = 97	*n* = 53	*n* = 44	*n* = 3	*n* = 18	*n* = 32	*n* = 7	*n* = 12	*n* = 25
Unskilled	59.8	58.5	61.4	0.0	50.0	68.8	57.1	66.7	60.0
Semi-skilled	29.9	32.1	27.3	66.7	33.3	28.1	42.9	25.0	24.0
Skilled or technical	8.2	7.6	9.1	33.3	11.1	3.1	0.0	8.3	12.0
Professional	2.1	1.9	2.3	0.0	5.6	0.0	0.0	0.0	4.0
Salary rate (per hour)	*n* = 165	*n* = 95	*n* = 70	*n* = 12	*n* = 34	*n* = 49	*n* = 12	*n* = 20	*n* = 38
$0	1.8	2.1	1.4	8.3	0.0	2.0	8.3	0.0	0.0
< $5.25	7.9	4.2	12.9	0.0	8.8	2.0	16.7	10.0	13.2
$5.26–$6.00	32.1	29.5	35.7	8.3	26.5	36.7	33.3	30.0	39.5
$6.01–$7.00	26.7	30.5	21.4	41.7	23.5	32.7	25.0	15.0	23.7
$7.01–$8.00	12.1	14.7	8.6	16.7	17.6	12.2	0.0	20.0	5.3
$8.01–$9.00	6.1	6.3	5.7	16.7	5.9	4.1	8.3	5.0	5.3
$9.01–$10.00	4.8	5.3	4.3	0.0	8.8	4.1	0.0	10.0	2.6
$10.01–$11.00	3.6	2.1	5.7	0.0	2.9	2.0	0.0	5.0	7.9
$11.01–$12.00	1.8	3.2	0.0	8.3	5.9	0.0	0.0	0.0	0.0
$12.01–$13.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
> $13.00	3.0	2.1	4.3	0.0	0.0	4.1	8.3	5.0	2.6
Job expectation	*n* = 221	*n* = 129	*n* = 92	*n* = 17	*n* = 42	*n* = 70	*n* = 12	*n* = 30	*n* = 50
Unskilled	2.7	4.7	0.0	11.8	2.4	4.3	0.0	0.0	0.0
Semi-skilled	5.9	7.0	4.4	5.9	7.1	7.1	8.3	3.3	4.0
Skilled or technical	21.7	20.2	23.9	11.8	19.0	22.9	16.7	20.0	28.0
Professional	69.7	68.2	71.7	70.6	71.4	65.7	75.0	76.7	68.0
Job satisfaction	*n* = 170	*n* = 99	*n* = 71	*n* = 12	*n* = 35	*n* = 52	*n* = 11	*n* = 20	*n* = 40
Mean	2.8	2.7	2.8	3.0	2.7	2.7	2.9	2.9	2.8
Confidence in career goal	*n* = 221	*n* = 129	*n* = 92	*n* = 17	*n* = 42	*n* = 70	*n* = 12	*n* = 30	*n* = 50
Mean	4.2	4.3	4.1	4.6	4.3	4.3	4.2	4.3	4.0

Note. Source: 1998 Education-To-Careers Follow-Up Survey.

Table O8

Job Type by Tech Prep Status and Employment Status for Golden Crescent (TX)

		All		**Full-time**		**Part-time**	
Job type	**Total** $n = 165$	**Full-time** $n = 84$	**Part-time** $n = 81$	**Tech prep** $n = 48$	**Non-tech prep** $n = 36$	**Tech prep** $n = 47$	**Non-tech prep** $n = 34$
Unskilled	56.4	47.6	65.4	47.9	47.2	63.8	67.7
Semi-skilled	30.9	34.5	27.2	41.7	25.0	25.5	29.1
Skilled or technical	7.9	10.7	4.9	8.3	13.9	6.4	2.9
Professional	4.8	7.1	2.5	2.1	13.9	4.3	0.0
		$\chi^2 = 6.58$, $df = 2$, $p = .037$ (collapsing *skilled/technical* and *professional*)		$\chi^2 = 8.27$, $df = 0.016$ (collapsing *skilled/technical* and *professional*)			

Note. Source: 1998 Education-To-Careers Follow-Up Survey.

Table O9

Post-High-School Work Experience by Tech Prep Status and Panel for Miami Valley (OH)

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
				'95	'96	'97	'95	'96	'97
Employment status	*n* = 193	*n* = 96	*n* = 97	*n* = 6	*n* = 26	*n* = 64	*n* = 9	*n* = 25	*n* = 63
Unemployed, not seeking	9.8	6.3	13.4	16.7	3.8	6.3	11.1	4.0	17.5
Unemployed, seeking	4.1	2.1	6.2	0.0	0.0	3.1	0.0	12.0	4.8
Part-time	39.9	42.7	37.1	0.0	38.5	48.4	33.3	44.0	34.9
Full-time	46.1	49.0	43.3	83.3	57.7	42.2	55.6	40.0	42.9
Military	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Number of jobs after high school	*n* = 198	*n* = 100	*n* = 98	*n* = 7	*n* = 28	*n* = 65	*n* = 9	*n* = 25	*n* = 64
No job	2.0	3.0	1.0	0.0	7.1	1.5	0.0	0.0	1.6
1 job	18.2	20.0	16.3	42.9	10.7	21.5	22.2	8.0	18.8
2 jobs	41.4	38.0	44.9	14.3	39.3	40.0	11.1	36.0	53.1
3 jobs	21.7	22.0	21.4	42.9	17.9	21.5	33.3	28.0	17.2
4 jobs	11.1	11.0	11.2	0.0	10.7	12.3	33.3	16.0	6.3
5 or more jobs	5.6	6.0	5.1	0.0	14.3	3.1	0.0	12.0	3.1
Employment time—current job	*n* = 167	*n* = 91	*n* = 76	*n* = 7	*n* = 25	*n* = 59	*n* = 7	*n* = 20	*n* = 49
< 6 months	37.7	34.1	42.1	0.0	28.0	40.7	28.6	40.0	44.9
7–12 months	18.6	15.4	22.4	14.3	8.0	18.6	28.6	30.0	18.4
13–24 months	19.8	19.8	19.7	0.0	36.0	15.3	14.3	15.0	22.5
25–36 months	12.6	16.5	7.9	28.6	24.0	11.9	0.0	15.0	6.1
> 36 months	11.4	14.3	7.9	57.1	4.0	13.6	28.6	0.0	8.2
Job type	*n* = 167	*n* = 91	*n* = 76	*n* = 7	*n* = 25	*n* = 59	*n* = 7	*n* = 20	*n* = 49
Unskilled	47.9	44.0	52.6	42.9	44.0	44.1	42.9	50.0	55.1
Semi-skilled	26.9	27.5	26.3	14.3	24.0	30.5	28.6	30.0	24.5
Skilled or technical	20.4	25.3	14.5	28.6	28.0	23.7	14.3	10.0	16.3
Professional	4.8	3.3	6.6	14.3	4.0	1.7	14.3	10.0	4.1

Table O9 (continued)

				Tech prep by panel			Non-tech prep by panel		
Variables	**Total**	**Tech prep**	**Non-tech prep**	**'95**	**'96**	**'97**	**'95**	**'96**	**'97**
Job type for those with 1–2 jobs since HS	*n* = 95	*n* = 53	*n* = 42	*n* = 4	*n* = 14	*n* = 35	*n* = 1	*n* = 8	*n* = 33
Unskilled	46.3	41.5	52.4	75.0	28.6	42.9	0.0	62.5	51.5
Semi-skilled	29.5	30.2	28.6	0.0	28.6	34.3	100.0	12.5	30.3
Skilled or technical	18.9	22.6	14.3	0.0	35.7	20.0	0.0	25.0	12.1
Professional	5.3	5.7	4.8	25.0	7.1	2.9	0.0	0.0	6.1
Salary rate (per hour)	*n* = 177	*n* = 91	*n* = 86	*n* = 7	*n* = 25	*n* = 59	*n* = 7	*n* = 20	*n* = 47
$0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
< $5.25	1.8	2.2	1.4	0.0	8.0	0.0	0.0	0.0	2.1
$5.26–$6.00	11.1	8.8	13.5	0.0	8.0	10.2	0.0	5.0	19.1
$6.01–$7.00	20.8	18.7	23.0	0.0	16.0	22.0	42.9	35.0	14.9
$7.01–$8.00	13.2	15.4	10.8	14.3	8.0	18.6	0.0	20.0	8.5
$8.01–$9.00	15.5	18.7	12.2	14.3	20.0	18.6	14.3	10.0	12.8
$9.01–$10.00	14.1	12.1	16.2	0.0	12.0	13.6	14.3	5.0	21.3
$10.01–$11.00	9.0	9.9	8.1	14.3	8.0	10.2	0.0	10.0	8.5
$11.01–$12.00	5.1	2.2	8.1	0.0	4.0	1.7	14.3	5.0	8.5
$12.01–$13.00	3.0	3.3	2.7	14.3	4.0	1.7	0.0	10.0	0.0
> $13.00	6.5	8.8	4.1	42.9	12.0	3.4	14.3	0.0	4.3
Job expectation	*n* = 198	*n* = 100	*n* = 98	*n* = 7	*n* = 28	*n* = 65	*n* = 9	*n* = 25	*n* = 64
Unskilled	1.0	1.0	1.0	0.0	3.6	0.0	11.1	0.0	0.0
Semi-skilled	4.5	3.0	6.1	14.3	0.0	3.1	22.2	4.0	4.7
Skilled or technical	18.7	22.0	15.3	28.6	28.6	18.5	11.1	12.0	17.2
Professional	75.8	74.0	77.6	57.1	67.9	78.5	55.6	84.0	78.1
Job satisfaction	*n* = 167	*n* = 91	*n* = 76	*n* = 7	*n* = 25	*n* = 59	*n* = 7	*n* = 20	*n* = 49
Mean	2.7	2.8	2.6	2.7	2.8	2.8	2.0	2.4	2.7
Confidence in career goal	*n* = 198	*n* = 100	*n* = 98	*n* = 7	*n* = 28	*n* = 65	*n* = 9	*n* = 25	*n* = 64
Mean	4.2	4.2	4.2	4.3	4.1	4.2	4.2	4.2	4.3

Note. Source: 1998 Education-To-Careers Follow-Up Survey.

Table O10
Job Type by Tech Prep Status and Employment Status for Miami Valley (OH)

		All		**Full-time**		**Part-time**	
Job type	**Total** *n* = 164	**Full-time** *n* = 88	**Part-time** *n* = 76	**Tech prep** *n* = 47	**Non-tech prep** *n* = 41	**Tech prep** *n* = 41	**Non-tech prep** *n* = 35
Unskilled	47.6	44.3	51.3	44.7	43.9	41.5	62.9
Semi-skilled	27.4	26.1	29.0	25.5	26.8	31.7	25.7
Skilled or technical	20.1	20.5	19.7	23.4	17.1	26.8	11.4
Professional	4.9	9.1	0.0	6.4	12.2	0.0	0.0

Note. Source: 1998 Education-To-Careers Follow-Up Survey.

Table O11

Post-High-School Work Experience by Tech Prep Status and Panel for Mt. Hood (OR)

				Tech prep by panel			Non-tech prep by panel		
Variables	**Total**	**Tech prep**	**Non-tech prep**	**'95**	**'96**	**'97**	**'95**	**'96**	**'97**
Employment status	*n* = 222	*n* = 113	*n* = 109	*n* = 21	*n* = 40	*n* = 52	*n* = 30	*n* = 43	*n* = 36
Unemployed, not seeking	9.0	10.6	7.3	0.0	12.5	13.5	13.3	9.3	0.0
Unemployed, seeking	9.5	9.7	9.2	4.8	10.0	11.5	6.7	9.3	11.1
Part-time	32.9	27.4	38.5	28.6	25.0	28.8	33.3	37.2	44.4
Full-time	46.4	49.6	43.1	57.1	50.0	46.2	43.3	41.9	44.4
Military	2.2	2.7	1.8	9.5	2.5	0.0	3.3	2.3	0.0
Number of jobs after high school	*n* = 223	*n* = 114	*n* = 109	*n* = 21	*n* = 40	*n* = 53	*n* = 30	*n* = 43	*n* = 36
No job	0.4	0.9	0.0	0.0	0.0	1.9	0.0	0.0	0.0
1 job	27.8	29.8	25.7	33.3	27.5	30.2	10.0	27.9	36.1
2 jobs	30.0	28.9	31.2	33.3	17.5	35.8	36.7	30.2	27.8
3 jobs	21.1	24.6	17.4	14.3	37.5	18.9	13.3	25.6	11.1
4 jobs	8.1	7.0	9.2	4.8	5.0	9.4	13.3	7.0	8.3
5 or more jobs	12.6	8.8	16.5	14.3	12.5	3.8	26.7	9.3	16.7
Employment time—current job	*n* = 179	*n* = 89	*n* = 90	*n* = 20	*n* = 31	*n* = 38	*n* = 24	*n* = 33	*n* = 33
< 6 months	25.7	18.0	33.3	5.0	22.6	21.1	20.8	24.2	51.5
7–12 months	24.6	27.0	22.2	20.0	19.4	36.8	25.0	24.2	18.2
13–24 months	22.9	23.6	22.2	25.0	25.8	21.1	29.2	21.2	18.2
25–36 months	11.2	11.2	11.1	5.0	16.1	10.5	4.2	21.2	6.1
> 36 months	15.6	20.2	11.1	45.0	16.1	10.5	20.8	9.1	6.1
Job type	*n* = 179	*n* = 88	*n* = 91	*n* = 20	*n* = 30	*n* = 38	*n* = 24	*n* = 33	*n* = 34
Unskilled	44.1	42.1	46.2	35.0	43.3	44.7	45.8	39.4	53.0
Semi-skilled	34.1	38.6	29.7	40.0	43.3	34.2	29.2	30.3	29.1
Skilled or technical	16.8	13.6	19.8	20.0	6.7	15.8	16.7	27.3	14.7
Professional	5.0	5.7	4.4	5.0	6.7	5.3	8.3	3.0	2.9

Table O11 (continued)

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
				'95	'96	'97	'95	'96	'97
Job type for those with 1–2 jobs since HS	*n* = 108	*n* = 56	*n* = 52	*n* = 14	*n* = 15	*n* = 27	*n* = 10	*n* = 20	*n* = 22
Unskilled	46.3	41.1	51.9	42.9	40.0	40.7	40.0	45.0	63.6
Semi-skilled	33.3	44.6	21.2	42.9	53.3	40.7	40.0	15.0	18.2
Skilled or technical	18.5	12.5	25.0	14.3	6.7	14.8	20.0	40.0	13.6
Professional	1.9	1.8	1.9	0.0	0.0	3.7	0.0	0.0	4.5
		$\chi^2 = 7.26$, *df* = 2, *p* = .027 (collapsing *skilled/technical* and *professional*)							
Salary rate (per hour)	*n* = 175	*n* = 88	*n* = 87	*n* = 20	*n* = 30	*n* = 38	*n* = 23	*n* = 31	*n* = 33
$0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
< $5.25	2.9	2.3	3.5	0.0	3.3	2.6	4.3	3.2	3.0
$5.26–$6.00	9.1	13.6	4.6	15.0	20.0	7.9	4.3	6.5	3.0
$6.01–$7.00	18.3	12.5	24.1	10.0	10.0	15.8	17.4	22.6	30.3
$7.01–$8.00	17.1	15.9	18.4	0.0	16.7	23.7	13.0	19.4	21.2
$8.01–$9.00	12.0	11.4	12.6	15.0	3.3	15.8	13.0	16.1	9.1
$9.01–$10.00	12.0	12.5	11.5	10.0	16.7	10.5	4.3	12.9	15.2
$10.01–$11.00	8.6	8.0	9.2	0.0	10.0	10.5	17.4	6.5	6.1
$11.01–$12.00	4.6	5.7	3.5	20.0	3.3	0.0	8.7	0.0	3.0
$12.01–$13.00	4.6	6.8	2.3	10.0	10.0	2.6	8.7	0.0	0.0
> $13.00	10.9	11.4	10.3	20.0	6.7	10.5	8.7	12.9	9.1
Job expectation	*n* = 224	*n* = 114	*n* = 110	*n* = 21	*n* = 40	*n* = 53	*n* = 30	*n* = 43	*n* = 37
Unskilled	4.5	4.4	4.6	0.0	2.5	7.5	3.3	4.7	5.4
Semi-skilled	7.6	8.8	6.4	4.8	12.5	7.5	10.0	4.7	5.4
Skilled or technical	22.8	22.8	22.7	23.8	22.5	22.6	10.0	27.9	27.0
Professional	65.2	64.0	66.4	71.4	62.5	62.3	76.7	62.8	62.2
Job satisfaction	*n* = 179	*n* = 88	*n* = 91	*n* = 20	*n* = 30	*n* = 38	*n* = 24	*n* = 33	*n* = 34
Mean	2.7	2.8	2.7	2.6	3.0	2.7	3.0	2.2	2.8
Confidence in career goal	*n* = 224	*n* = 114	*n* = 110	*n* = 21	*n* = 40	*n* = 53	*n* = 30	*n* = 43	*n* = 37
Mean	4.1	4.2	4.1	4.0	4.1	4.3	4.0	4.2	4.0

Note. Source: 1998 Education-To-Careers Follow-Up Survey.

Table O12

Job Type by Tech Prep Status and Employment Status for Mt. Hood (OR)

		All		Full-time		Part-time	
Job type	**Total** *n* = 176	**Full-time** *n* = 106	**Part-time** *n* = 70	**Tech prep** *n* = 59	**Non-tech prep** *n* = 47	**Tech prep** *n* = 28	**Non-tech prep** *n* = 42
Unskilled	44.3	39.6	51.4	40.7	38.3	46.4	54.8
Semi-skilled	34.1	35.9	31.4	39.0	31.9	35.7	28.6
Skilled or technical	16.5	17.9	14.3	13.6	23.4	14.3	14.3
Professional	5.1	6.6	2.9	6.8	6.4	3.8	2.4

Note. Source: 1998 Education-To-Careers Follow-Up Survey.

Table O13

Post-High-School Work Experience by Tech Prep Status and Panel for Guilford County (NC)

Variables	Total	Tech prep	Non-tech prep	Tech prep by panel			Non-tech prep by panel		
				'96	'97	'98	'96	'97	'98
Employment status	*n* = 340	*n* = 199	*n* = 141	*n* = 37	*n* = 70	*n* = 92	*n* = 39	*n* = 58	*n* = 44
Unemployed, not seeking	6.5	5.5	7.8	0.0	5.7	7.6	12.8	6.9	4.5
Unemployed, seeking	5.9	5.0	7.1	5.4	7.1	3.3	0.0	8.6	11.4
Part-time	45.3	43.7	47.5	35.1	35.7	53.3	46.2	44.8	52.3
Full-time	40.9	45.7	34.0	59.5	51.4	35.9	33.3	37.9	29.5
Military	1.5	0.0	3.5	0.0	0.0	0.0	7.7	1.7	2.3
		$\chi^2 = 11.34$, $df = 4$, $p = .023$							
Number of jobs after high school	*n* = 352	*n* = 207	*n* = 145	*n* = 37	*n* = 71	*n* = 99	*n* = 39	*n* = 58	*n* = 48
No job	3.4	3.9	2.8	0.0	1.4	7.1	0.0	0.0	8.3
1 job	34.1	36.7	30.3	24.3	23.9	50.5	25.6	27.6	37.5
2 jobs	32.7	32.9	32.4	27.0	42.3	28.3	25.6	32.8	37.5
3 jobs	18.7	17.9	20.0	18.9	26.8	11.1	25.6	24.1	10.4
4 jobs	6.8	4.4	10.3	13.5	4.2	1.0	20.5	8.6	4.2
5 or more jobs	4.3	4.4	4.1	16.2	1.4	2.0	2.6	6.9	2.1
Employment time—current job	*n* = 289	*n* = 176	*n* = 113	*n* = 35	*n* = 60	*n* = 81	*n* = 33	*n* = 48	*n* = 32
< 6 months	29.8	26.1	35.4	25.7	25.0	27.2	21.2	37.5	46.9
7–12 months	33.9	34.1	33.6	31.4	35.0	34.6	36.4	29.2	37.5
13–24 months	17.3	19.3	14.2	17.1	21.7	18.5	24.2	12.5	6.3
25–36 months	9.7	10.8	8.0	11.4	10.0	11.1	9.1	10.4	3.1
> 36 months	9.3	9.7	8.9	14.3	8.3	8.6	9.1	10.4	6.3
Job type	*n* = 288	*n* = 175	*n* = 113	*n* = 36	*n* = 60	*n* = 79	*n* = 33	*n* = 48	*n* = 32
Unskilled	55.6	52.0	61.1	44.4	46.7	59.5	39.4	60.4	84.4
Semi-skilled	30.9	32.6	28.3	38.9	31.7	30.4	42.4	31.3	9.4
Skilled or technical	11.1	13.1	8.0	11.1	21.7	7.6	15.2	6.3	3.1
Professional	2.4	2.3	2.7	5.6	0.0	2.5	3.0	2.1	3.1

Table O13 (continued)

				Tech prep by panel			Non-tech prep by panel		
Variables	**Total**	**Tech prep**	**Non-tech prep**	**'96**	**'97**	**'98**	**'96**	**'97**	**'98**
Job type for the first two jobs	*n* = 190	*n* = 122	*n* = 68	*n* = 18	*n* = 38	*n* = 66	*n* = 16	*n* = 27	*n* = 25
Unskilled	55.8	49.2	67.7	44.4	39.5	56.1	43.8	63.0	88.0
Semi-skilled	30.5	35.3	22.1	38.9	36.8	33.3	37.5	25.9	8.0
Skilled or technical	11.6	13.9	7.4	11.1	23.7	9.1	18.8	7.4	0.0
Professional	2.1	1.6	2.9	5.6	0.0	1.5	0.0	3.7	4.0
		$\chi^2 = 6.05$, $df = 2$, $p = .049$ (collapsing *skilled/technical* and *professional*)							
Salary rate (per hour)	*n* = 281	*n* = 170	*n* = 111	*n* = 34	*n* = 58	*n* = 78	*n* = 31	*n* = 48	*n* = 32
$0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
< $5.25	2.1	2.4	1.8	0.0	1.7	3.8	3.2	2.1	0.0
$5.26–$6.00	11.4	8.8	15.3	2.9	8.6	11.5	16.1	12.5	18.8
$6.01–$7.00	27.8	25.9	30.6	26.5	15.5	33.3	16.1	22.9	56.3
$7.01–$8.00	22.4	24.1	19.8	23.5	27.6	21.8	22.6	25.0	9.4
$8.01–$9.00	15.3	14.7	16.2	11.8	17.2	14.1	22.6	16.7	9.4
$9.01–$10.00	9.3	10.0	8.1	11.8	12.1	7.7	6.5	12.5	3.1
$10.01–$11.00	5.0	5.3	4.5	8.8	3.4	5.1	6.5	4.2	3.1
$11.01–$12.00	1.1	0.6	1.8	0.0	1.7	0.0	3.2	2.1	0.0
$12.01–$13.00	0.4	0.6	0.0	0.0	1.7	0.0	0.0	0.0	0.0
> $13.00	5.3	7.7	1.8	14.7	10.3	2.6	3.2	2.1	0.0
				$\chi^2 = 8.20$, $df = 2$, $p = .017$ (median test)			$\chi^2 = 13.16$, $df = 2$, $p = .001$ (median test)		
Job expectation	*n* = 351	*n* = 208	*n* = 143	*n* = 38	*n* = 71	*n* = 99	*n* = 39	*n* = 58	*n* = 46
Unskilled	2.0	1.0	3.5	2.6	1.4	0.0	2.6	3.4	4.3
Semi-skilled	5.4	5.3	5.6	15.8	2.8	3.0	7.7	5.2	4.3
Skilled or technical	20.2	21.2	18.9	23.7	26.8	16.2	12.8	24.1	17.4
Professional	72.4	72.6	72.0	57.9	69.0	80.8	76.9	67.2	73.9
Job satisfaction	*n* = 289	*n* = 176	*n* = 113	*n* = 36	*n* = 60	*n* = 80	*n* = 33	*n* = 48	*n* = 32
Mean	2.6	2.6	2.7	2.6	2.4	2.7	2.6	2.7	2.8
Confidence in career goal	*n* = 352	*n* = 208	*n* = 144	*n* = 38	*n* = 71	*n* = 99	*n* = 39	*n* = 58	*n* = 47
Mean	4.3	4.3	4.3	4.0	4.3	4.1	4.2	4.2	4.2

Note. Source: 1998 Education-To-Careers Follow-Up Survey.

Table O14

Job Type by Tech Prep Status and Employment Status for Guilford County (NC)

		All		**Full-time**		**Part-time**	
Job type	**Total** *n* = 285	**Full-time** *n* = 139	**Part-time** *n* = 146	**Tech prep** *n* = 91	**Non-tech prep** *n* = 48	**Tech prep** *n* = 82	**Non-tech prep** *n* = 64
Unskilled	55.4	41.7	68.5	40.7	43.8	63.4	75.0
Semi-skilled	31.2	40.3	22.6	40.7	39.6	24.4	20.3
Skilled or technical	10.9	15.1	6.9	16.5	12.5	9.8	3.1
Professional	2.5	2.9	2.1	2.2	4.2	2.4	1.6
		$\chi^2 = 20.74$, $df = 2$, $p = <.001$ (collapsing *skilled/technical* and *professional*)					

Note. Source: 1998 Education-To-Careers Follow-Up Survey.

Table O15

Post-High-School Work Experience by Tech Prep Status and Panel for San Mateo (CA)

				Tech prep by panel			Non-tech prep by panel		
Variables	**Total**	**Tech prep**	**Non-tech prep**	**'95**	**'96**	**'97**	**'95**	**'96**	**'97**
Employment status	*n* = 224	*n* = 116	*n* = 108	*n* = 27	*n* = 40	*n* = 49	*n* = 30	*n* = 38	*n* = 40
Unemployed, not seeking	11.2	10.3	12.0	7.4	12.5	10.2	10.0	18.4	7.5
Unemployed, seeking	8.5	7.8	9.3	7.4	2.5	12.2	6.7	2.6	17.5
Part-time	48.2	48.3	48.1	48.1	55.0	42.9	46.7	47.4	50.0
Full-time	32.1	33.6	30.6	37.0	30.0	34.7	36.7	31.6	25.0
Military	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Number of jobs after high school	*n* = 238	*n* = 124	*n* = 114	*n* = 27	*n* = 42	*n* = 55	*n* = 31	*n* = 40	*n* = 43
No job	5.9	6.5	5.3	0.0	4.8	10.9	3.2	5.0	7.0
1 job	26.1	27.4	24.6	7.4	38.1	29.1	9.7	22.5	37.2
2 jobs	26.5	25.0	28.1	29.6	19.0	27.3	22.6	40.0	20.9
3 jobs	22.3	21.8	22.8	22.2	21.4	21.8	35.5	17.5	18.6
4 jobs	8.8	8.9	8.8	14.8	4.8	9.1	6.5	7.5	11.6
5 or more jobs	10.5	10.5	10.5	25.9	11.9	1.8	22.6	7.5	4.7
				$\chi^2 = 14.39$, *df* = 6, *p* = .026			$\chi^2 = 13.82$, *df* = 6, *p* = .032		
Employment time—current job	*n* = 180	*n* = 94	*n* = 86	*n* = 23	*n* = 32	*n* = 39	*n* = 25	*n* = 31	*n* = 30
< 6 months	33.9	26.6	41.9	13.0	21.9	38.5	40.0	45.2	40.0
7–12 months	21.1	26.6	15.1	34.8	25.0	23.1	8.0	19.4	16.7
13–24 months	23.9	21.3	26.7	26.1	15.6	23.1	32.0	16.1	33.3
25–36 months	8.9	8.5	9.3	4.4	9.4	10.3	12.0	12.9	3.3
> 36 months	12.2	17.0	7.0	21.7	28.1	5.1	8.0	6.5	6.7
		$\chi^2 = 10.19$, *df* = 4, *p* = .037							
Job type for the first two jobs	*n* = 179	*n* = 93	*n* = 86	*n* = 22	*n* = 32	*n* = 39	*n* = 25	*n* = 31	*n* = 30
Unskilled	49.7	48.4	51.2	45.5	43.8	53.9	44.0	45.2	63.3
Semi-skilled	32.4	36.6	27.9	36.4	37.5	35.9	28.0	32.3	23.3
Skilled or technical	14.5	12.9	16.3	18.2	18.8	5.1	16.0	22.6	10.0
Professional	3.4	2.2	4.7	0.0	0.0	5.1	12.0	0.0	3.3

Table O15 (continued)

				Tech prep by panel			Non-tech prep by panel		
Variables	**Total**	**Tech prep**	**Non-tech prep**	**'95**	**'96**	**'97**	**'95**	**'96**	**'97**
Job type for those with 1–2 jobs since HS	*n* = 100	*n* = 53	*n* = 47	*n* = 9	*n* = 18	*n* = 26	*n* = 8	*n* = 20	*n* = 19
Unskilled	47.0	49.1	44.7	55.6	44.4	50.0	37.5	45.0	47.4
Semi-skilled	35.0	37.7	31.9	33.3	33.3	42.3	50.0	25.0	31.6
Skilled or technical	15.0	9.4	21.3	11.1	22.2	0.0	12.5	30.0	15.8
Professional	3.0	3.8	2.1	0.0	0.0	7.7	0.0	0.0	5.3
Salary rate (per hour)	*n* = 178	*n* = 92	*n* = 86	*n* = 22	*n* = 31	*n* = 38	*n* = 24	*n* = 31	*n* = 30
$0	1.1	1.1	1.2	4.5	3.2	2.6	4.2	9.7	0.0
< $5.25	3.9	3.3	4.7	0.0	0.0	0.0	0.0	0.0	0.0
$5.26–$6.00	6.7	7.6	5.8	9.1	6.5	7.9	0.0	6.5	10.0
$6.01–$7.00	14.0	7.6	20.9	13.6	6.5	5.3	12.5	19.4	30.0
$7.01–$8.00	14.6	18.5	10.5	9.1	19.4	23.7	12.5	3.2	16.7
$8.01–$9.00	10.1	14.1	5.8	4.5	19.4	15.8	4.2	9.7	3.3
$9.01–$10.00	13.5	14.1	12.8	13.6	9.7	18.4	16.7	12.9	10.0
$10.01–$11.00	9.6	10.9	8.1	4.5	16.1	10.5	8.3	3.2	13.3
$11.01–$12.00	10.1	13.0	7.0	13.6	12.9	13.2	4.2	12.9	3.3
$12.01–$13.00	3.4	2.2	4.7	9.1	0.0	0.0	8.3	3.2	3.3
> $13.00	12.9	7.6	18.6	18.2	6.5	2.6	29.2	19.4	10.0
Job expectation	*n* = 238	*n* = 124	*n* = 114	*n* = 27	*n* = 42	*n* = 55	*n* = 31	*n* = 40	*n* = 43
Unskilled	2.9	1.6	4.4	7.4	0.0	0.0	6.5	2.5	4.7
Semi-skilled	5.5	5.6	5.3	3.7	7.1	5.5	3.2	2.5	9.3
Skilled or technical	13.4	16.9	9.7	7.4	21.4	18.2	9.7	15.0	4.7
Professional	78.2	75.8	80.7	81.5	71.4	76.4	80.6	80.0	81.4
Job satisfaction	*n* = 176	*n* = 91	*n* = 85	*n* = 22	*n* = 31	*n* = 38	*n* = 25	*n* = 31	*n* = 29
Mean	2.8	2.8	2.8	2.6	2.9	2.7	2.7	2.6	3.2
Confidence in career goal	*n* = 238	*n* = 124	*n* = 114	*n* = 27	*n* = 42	*n* = 55	*n* = 31	*n* = 40	*n* = 43
Mean	4.1	4.1	4.1	4.3	3.7	4.0	4.1	4.0	3.9

Note. Source: 1998 Education-To-Careers Follow-Up Survey.

Table O16

Job Type by Tech Prep Status and Employment Status for San Mateo (CA)

		All		**Full-time**		**Part-time**	
Job type	**Total** *n* = 175	**Full-time** *n* = 70	**Part-time** *n* = 105	**Tech prep** *n* = 38	**Non-tech prep** *n* = 32	**Tech prep** *n* = 54	**Non-tech prep** *n* = 51
Unskilled	50.3	38.6	58.1	47.4	28.1	50.0	66.7
Semi-skilled	32.6	32.9	32.4	34.2	31.3	38.9	25.5
Skilled or technical	14.3	24.3	7.6	15.8	34.4	11.1	3.9
Professional	2.9	4.3	1.9	2.6	6.3	0.0	3.9
		$\chi^2 = 12.08$, $df = 2$, $p = .002$ (collapsing *skilled/technical* and *professional*)					

Note. Source: 1998 Education-To-Careers Follow-Up Survey.